Vol. 1021 Number 2

OFFICIAL GAZETTE

of the

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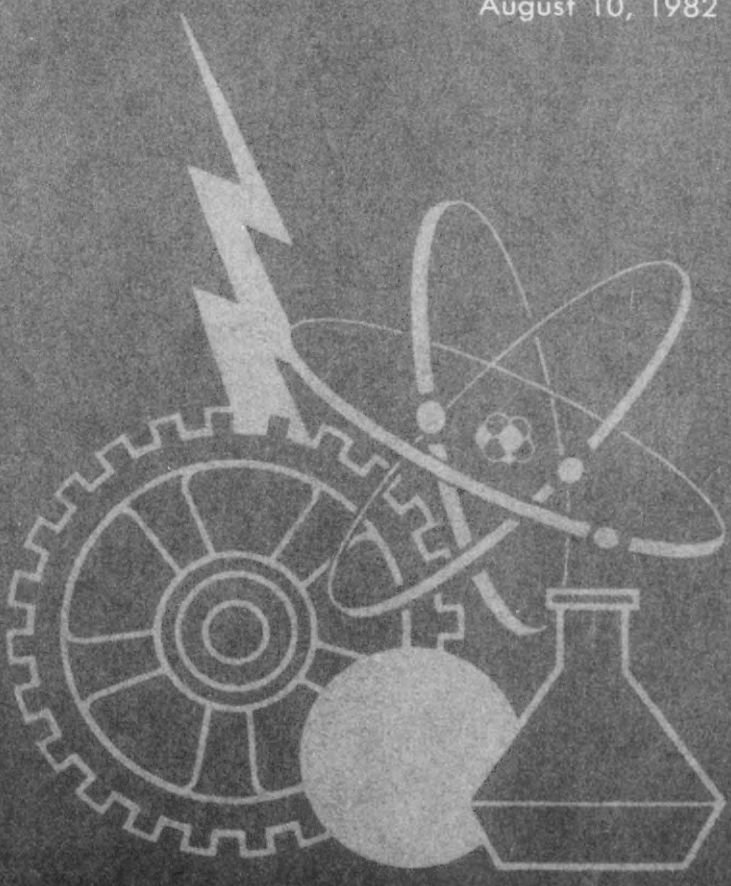

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OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

August 10, 1982 Volume 1021 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
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Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,573,173, Re. S.N. 384,494, Filed June 3, 1982, Cl. 203/21, PROCESS FOR RECOVERING EXCESS AMMONIA IN UREA SYNTHESIS BY DIRECT CONTACT CONDENSATION WITH LIQUID AMMONIA, Eiji Otsuka, et al., Owner of Record: *Mitsui Toatsu Chemicals, Inc., Tokyo, Japan,* Attorney or Agent: Eugene Sabol, et al., Ex. Gp.: 177

3,640,950, Re. S.N. 345,544, Filed Feb. 3, 1982, Cl. 260/45.75 K, HALOGENATED RESINS STABILIZED WITH NOVEL COMPOSITIONS, Lewis B. Weisfeld, Owner of Record: *Carstah Corp., Reading, Ohio,* Attorney or Agent: Cushman, Darby & Cushman, Ex. Gp.: 143

3,943,493, Re. S.N. 386,841, Filed June 9, 1982, Cl. 364/200, SHARED PROCESSOR DATA ENTRY SYSTEM, Richard M. Shelton, Owner of Record: *Sperry Rand Corp., New York, N.Y.,* Attorney or Agent: B. Franklin Griffin, et al., Ex. Gp.: 237

4,009,385, Re. S.N. 385,024, Filed June 4, 1982, Cl. 372/38, LASER CONTROL CIRCUIT, Darrell Dean Sell, Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: R. B. Ardis, Ex. Gp.: 352

4,139,302, Re. S.N. 366,903, Filed Apr. 9, 1982, Cl. 356/32, METHOD AND APPARATUS FOR INTERFEROMETRIC DEFORMATION ANALYSIS, Yau Y. Hung, et al., Owner of Record: *Engineering Consultants, Inc., Rochester, Mich.,* Attorney or Agent: Allen M. Krass, et al., Ex. Gp.: 257

4,191,182, Re. S.N. 354,054, Filed Mar. 2, 1982, Cl. 128/214R, METHOD AND APPARATUS FOR CONTINUOUS PLASMAPHERSIS, Robert P. Popovich, et al., Owner of Record: *Hemotherapy Instruments, Inc., Austin, Tex.,* Attorney or Agent: Michael T. McLemore, et al., Ex. Gp.: 335

4,206,344, Re. S.N. 383,199, Filed May 28, 1982, Cl. 219/507, ELECTRIC POWER CONTROLLERS, Karl Fischer, et al., Owner of Record: *E.G.O. Regeltechnik, GmbH., Oberderdingen, Germany,* Attorney or Agent: J. Rodman Steele, Jr., et al., Ex. Gp.: 213

4,206,344, Re. S.N. 383,200, Filed May 28, 1982, Cl. 219/507, ELECTRIC POWER CONTROLLERS, Karl Fischer, et al., Owner of Record: *E.G.O. Regeltechnik, GmbH Oberderingin, Germany,* Attorney or Agent: J. Rodman Steele, Jr., et al., Ex. Gp.: 213

4,206,344, Re. S.N. 383,270, Filed May 28, 1982, Cl. 219/507, ELECTRIC POWER CONTROLLERS, Karl Fischer, et al., Owner of Record: *E.G.O. Regeltechnik, GmbH Oberderingin, Germany,* Attorney or Agent: J. Rodman Steele, Jr., et al., Ex. Gp.: 213

4,207,707, Re. S.N. 383,461, Filed June 1, 1982, Cl. 49/501, METAL CLADDED WINDOW PRODUCTS, Joseph W. Holdiman, et al., Owner of Record: *Lancer Corp., Dubuque, Iowa,* Attorney or Agent: Robert E. O'Neill, Ex. Gp.: 354

4,237,443, Re. S.N. 387,343, Filed June 11, 1982, Cl. 338/202, MOVABLE WIPER FOR POTENTIOMETERS, Ernst Gass, Owner of Record: *Novotechnik KG Offterdinger & Co., Ostfildern, Germany,* Attorney or Agent: Henry L. Shenier, et al., Ex. Gp.: 213

4,247,306, Re. S.N. 386,440, Filed June 8, 1982, Cl. 51/322, DETECTION OF FLAWS IN METAL MEMBERS, Arnule Berge, Owner of Record: *Elkem-Spigerverket A/S, Oslo, Norway,* Attorney or Agent: William D. Lucas, et al., Ex. Gp.: 323

4,259,340, Re. S.N. 379,793, Filed May 19, 1982, Cl. 424/269, AURONE DERIVATIVES, Stephen Richard Baker, Owner of Record: *Lilly Industries Ltd., London, England,* Attorney or Agent: Authur R. Whale, et al., Ex. Gp.: 125

4,303,365, Re. S.N. 385,851, Filed June 7, 1982, Cl. 414/47, CONTINUOUS CHAIN STACKER/UNSTACKER, Maynard R. Euverard, et al., Owner of Record: *Velten & Pulver, Inc., Chicago, Ill.,* Attorney or Agent: Edward U. Dithmar, Ex. Gp.: 314

4,315,642, Re. S.N. 386,737, Filed June 9, 1982, Cl. 281/33, INTEGRALLY MOLDED COVERS AND SPINES FOR LOOSELEAF BOOKS, Dominic R. Errichiello, Owner of Record: *Glenbard Molded Binder, Inc., Lombard, Ill.,* Attorney or Agent: Herbert B. Keil, et al., Ex. Gp.: 322

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

3,982,953, Reexam. No. 90/000,226, Requested: July 7, 1982, Cl. 501/127, REFRACTORY CASTING, RAMMING OR STAMPING MASS, Paul Lennart Ivarsson, et al., Owner of Record: *Requester,* Attorney or Agent: Burns, Doane, Swecker & Mathis, Ex. Gp.: 113, Requester: Hoganas Aktiebolag, Hoganas, Sweden

4,165,717, Reexam. No. 90/000,227, Requested: July 9, 1982, Cl. 122/40, PROCESS FOR BURNING CARBONACEOUS MATERIALS, Lothar Reh, et al., Owner of Record: *Metallgesellschaft AG, Frankfurt am Main 1, West Germany,* Attorney or Agent: Felfe &

Lynch, Ex. Gp.: 340, Requester: Owner of Record

4,295,143, Reexam. No. 90/000,225, Requested: July 8, 1982, Cl. 343/8, LOW WIND LOAD MODIFIED FARABOLIC ANTENNA, John R. Winegard, et al., Owner of Record: *Conifer Corp., Burlington, Iowa,* Attorney or Agent: Robert C. Dorr, Ex. Gp.: 250, Requester: Owner of Record

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Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,236,709, Bandag, Inc., TIRE RECAPPING PROCESS, **filed** Feb. 18, 1982, D.C., E.D. Tex. (Texarkana), Doc. TX-82-27-CA, *Bandag, Inc.* v. *Smith Tire Co.* **Same, filed** June 3, 1982, D.C., M.D. Ga. (Macon), Doc. 82-204-3-MAC, *Bandag, Inc.* v. *Wall Tire Distributors, Inc.*

3,306,465, Francis P. Brennan, WARDROBE HANGER BAR WITH CAP LOCKING MEANS, **filed** May 13, 1976, D.C.N.J. (Camden), Doc. 76-0887, *Francis P. Brennan* v. *Garment Bar, Inc.* Stipulation of Settlement and Order of Dismissal without prejudice filed June 10, 1982.

3,330,557, Niels O. Young, MEANS FOR FORMING A RIGID LOOP FROM A LIMP LOOP; **3,374,933, same,** LOOP ERECTION SYSTEM; **3,398,949, same,** METHOD OF FORMING A RIGID LOOP FROM A LIMP LOOP; **3,406,967, same,** LOOP ERECTING DEVICE, **filed** May 11, 1982, D.C. Mass. (Boston), Doc. 82-1229-ML, *Bio-Rad Laboratories, Inc.* v. *Toys (R) Us, Inc.*

3,338,482, Clarence W. Jordan, DISPENSING BOTTLES, **filed** Feb. 5, 1982, D.C., W.D. Okla. (Oklahoma City), Doc. 82-180-E, *Continental Plastics Co.* v. *Clarence W. Jordan.* Case hereby dismissed without prejudice to its being refiled in a district where personal jurisdiction over draft is appropriate. Filed Apr. 7, 1982.

3,361,471, Warren S. Radford, BACK SUPPORT, **filed** May 26, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1382, *Warren S. Radford* v. *Florida Orthopedics, Inc.*

3,363,876, The Moorform Corp., PRECAST CONCRETE MANHOLE BASE MOLDING APPARATUS; **4,103,862, same,** APPARATUS FOR PRODUCTION OF PRECAST MANHOLE BASES; **4,177,229, same,** METHOD FOR PRODUCTION OF PRECAST MANHOLE BASES, **filed** Apr. 6, 1982, D.C., W.D. Va. (Roanoke), Doc. 82-0226, *The Moorform Corp.* v. *Salem Concrete Products, Inc.*

3,374,933. (See 3,330,557.)

3,385,140, Carpenter Mfg. Co., Inc., FLAT MULTICONDUCTOR STRIPPING APPARATUS, **filed** Aug. 13, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 4618, *Carpenter Mfg. Co., Inc.* v. *American Navigator.* Defendant is permanently enjoined from further infringing Plaintiff's patent. Filed Apr. 26, 1982.

3,398,949. (See 3,330,557.)

3,402,407, Edythe D. Andrews, DRAIN COVER, **filed** May 17, 1982, D.C.N.J. (Newark), Doc. 82-1556, *Edward O'Malley Valve Co.* v. *Melard Mfg. Corp.*

3,402,707, Paul Heron, VIBRATIONLESS ENGINES, **filed** May 27, 1982, D.C.N.J. (Newark), Doc. 82-1699, *Paul Heron* v. *American Honda Motor Co., Inc.*

3,406,967. (See 3,330,557.)

3,459,199, Jerry F. Connell, TEASING AND UNSNARLING IMPLEMENT, **filed** June 3, 1982, D.C., N.D. Ala. (Birmingham), Doc. 82-C-1261-M, *Jerry F. Connell, et al.* v. *K Mart Corp.*

3,537,725, C. I. Frost & Son, Inc., TROUGH-LIKE SEAL FOR ROLLER ASSEMBLY, **filed** May 24, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71923, *C. I. Frost & Son, Inc.* v. *Jervis B. Webb Co.*

3,554,495, Bach, Rothman and Pascual, PRECAST CONCRETE RAIL CONSTRUCTION; **3,617,028, same,** PRECAST REINFORCED CONCRETE POST AND RAIL ASSEMBLY, **filed** May 19, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-248-ORL-CIV-EK, *Concrete Unlimited, Inc.* v. *Oldaker Construction Co., Inc., et al.*

3,579,696, Rite-Hite Corp., DOCKBOARD; **3,728,753, same, filed** Oct. 22, 1980, D.C., W.D.N.Y. (Buffalo), Doc. 80-991C, *Rite-Hite Corp.* v. *Blue Giant Equipment of America, Inc.* Order of Dismissal without prejudice filed June 3, 1982.

3,589,177, Angelo L. Merlo, COMBUSTION MICROWAVE DIAGNOSTIC SYSTEM, **filed** May 11, 1982, D.C., E.D. Mich. (Ann Arbor), Doc. 82-60157, *Angelo L. Merlo* v. *Jodon Engineering Association, Inc.*

3,590,326, Westinghouse Electric Corp., OVERCURRENT PROTECTIVE DEVICE; **3,818,275, same,** CIRCUIT INTERRUPTER INCLUDING IMPROVED TRIP CIRCUIT USING CURRENT TRANSFORMERS; **3,826,951, same,** CIRCUIT BREAKER WITH REPLACEABLE RATING ADJUSTER AND INTERLOCK MEANS; **3,852,660, same,** CIRCUIT BREAKER FAULT SIMULATOR; **3,924,160, same,** CIRCUIT BREAKER WITH DETACHABLY CONNECTED FAULT SIMULATOR, **filed** Apr. 3, 1979, D.C. Del. (Wilmington), Doc. 79-174, *Westinghouse Electric Corp.* v. *Gould, Inc., et al.* Stipulation and Order dismissing action without prejudice filed May 27, 1982.

3,599,637, Boris Schwartz, INTRAVENOUS CATHETER ASSEMBLY, **filed** May 25, 1982, D.C.N.J. (Newark), Doc. 82-1653, *C. R. Bard, Inc.* v. *Boris Schwartz.*

3,617,028. (See 3,554,495.)

3,646,624, Bridgewater Mfg. Corp., DISPOSABLE DRAW SHEET, **filed** June 7, 1982, D.C.N.J. (Trenton), Doc. 82-1862, *Bridgewater Mfg. Corp.* v. *Clopay Corp., et al.*

3,648,768, Gunter Scholl, HEAT-EXCHANGE COMPONENTS; **4,112,921,** Calvin D. MacCracken, METHOD AND SYSTEM FOR UTILIZING A FLEXIBLE TUBING SOLAR COLLECTOR, **filed** Mar. 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1378, *Bio-Energy Systems, Inc.* v. *Environmental Resources, Inc.*

3,682,418, Garden Island Helicopters, Inc., AERIAL SPRAYING DEVICE, **filed** Jan. 6, 1978, D.C. Hawaii (Honolulu), Doc. 78-0003, *Garden Island Helicopters, Inc., et al.* v. *Murrayair, Ltd., et al.*

3,712,951, Ovation Instruments, Inc., BRIDGE TYPE PIEZOELECTRIC PICKUP FOR STRINGED INSTRUMENTS, **filed** June 6, 1982, D.C. Conn. (Hartford), Doc. H-82-530, *Ovation Instruments, Inc.* v. *Morlin Industries, Inc.*

3,728,753. (See 3,579,696.)

3,818,275. (See 3,590,326.)

3,826,951. (See 3,590,326.)

3,862,660. (See 3,590,326.)

3,857,774, Imperial Metal Industries (Kynoch) Ltd., CATHODES FOR ELECTROLYTIC CELL, **filed** Apr. 30, 1982, D.C.S.C. (Columbia), Doc. 82-846-6, *IMI Kynoch, Ltd.* v. *Nassau Recycle Corp., et al.* **Same, filed** May 27, 1982, D.C.N.J. (Newark), Doc. 82-1688, *Titanium Industries* v. *IMI Kynoch Ltd.*

3,863,691, Maschinenfabrik Zuckerman Komm-Ges, CONTOUR COPYING LATHE, **filed** Sept. 9, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2160, *A. C. Compacting Presses, Inc.* v. *Maschinenfabrik Zuckerman Komm-Ges.* Stipulation of dismissal with prejudice filed Apr. 15, 1982.

3,885,932, Super Products Corp., DUST FILTRATION SYSTEM; **3,973,935, same, filed** May 16, 1978, D.C., N.D. Ill. (Chicago), Doc. 78 C 1929, *The Meyers-Sherman Co.* v. *Super Products Corp.* Cause dismissed with prejudice on May 4, 1982.

3,897,056, Turco Mfg. Co., SAFETY STRAP SWING SEAT, **filed** May 22, 1981, D.C., S.D. Ill. (E. St. Louis), Doc. 81-3219, *Turco Mfg. Co.* v. *The May Dept. Stores Co., et al.* Defendant is hereby permanently enjoined and restrained from further infringing Plaintiff's patent. Filed Apr. 26, 1982.

3,904,506, Shatterproof Glass Corp., APPARATUS FOR CONTINUOUS PRODUCTION OF SPUTTER-COATED GLASS PRODUCTS; **3,925,182, same,** METHOD FOR CONTINUOUS PRODUCTION OF SPUTTER-COATED GLASS PRODUCTS, **filed** Apr. 23, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-71481, *Leybold-Heraeus GmbH* v. *Shatterproof Glass Corp.*

3,913,520, Precision Thin Film Corp., HIGH VACUUM DEPOSITION APPARATUS; **4,107,350, same** METHOD FOR DEPOSITING FILM ON A SUBSTRATE; **4,210,701, same,** METHOD AND APPARATUS FOR DEPOSITING FILM ON A SUBSTRATE, AND PRODUCTS PRODUCED THEREBY, **filed** Dec. 8, 1981, D.C., C.D. Calif, (Los Angeles), Doc. 81 6198, *Precision Thin Film Corp.* v. *Plastar Optical Laboratories, Inc., et al.* Plaintiff is owner of Pat. Nos. 3,913,520, 4,107,350 and 4,210,701, which are good and valid. Defendant is permanently enjoined from further infringement of Plaintiff's patents. Filed May 7, 1982.

3,924,160. (See 3,590,326.)

3,925,182. (See 3,904,506.)

3,944,760, CTS Corp., SWITCH ASSEMBLY HAVING SLIDER ACTUATOR INSULATING PLATE INSERTED BETWEEN NORMALLY CLOSED CONTACTS, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82-1850, *CTS Corp.* v. *Stanford Applied Engineering, Inc.*

3,960,006, Alco Standard Corp., NON-DESTRUCTIVE TEST APPARATUS AND METHOD FOR A MATERIAL HAVING A CAVITY THEREIN, **filed** May 27, 1982, D.C., E.D. Pa. (Philadelphia), Doc. 82-2352, *Alco Standard Corp.* v. *Westinghouse Electric Corp.*

3,973,935. (See 3,885,932.)

3,989,110, Medlock and Ragsdale, GREEN ONION HARVESTER, **filed** Sept. 25, 1981, D.C., N.D. Calif. (San Francisco), Doc. C81-3855 SAW, *H. Gene Medlock and Herman Ragsdale,* v. *Oshita, Inc., et al.* Complaint and Counterclaims dismissed with prejudice. Filed Apr. 22, 1982.

3,993,520, Werner & Wiele, WINDSHIELD REPAIR APPARATUS AND METHOD, **filed** Dec. 3, 1981, D.C. Minn. (Minneapolis), Doc. 4-81-Civ. 835, *Novus, Inc. and Frank D. Werner* v. *Hare D. Stuart, et al.* **Same, filed** June 7, 1982, D.C. Minn. (Minneapolis), Doc, 4-82 Civil 802, *Novus, Inc. and Frank D. Werner* v. *International Glass Repair of St. Paul Ltd., et al.*

4,018,135, Consolidated Technologies Corp., HYDRAULICALLY POWERED IMPACT DEVICE, **filed** Jan. 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 0309, *Consolidated Technologies Corp.* v. *Edgar J. Justus.* Case dismissed without prejudice on June 16, 1982.

4,034,534, John L. Taylor, LOUVERED CEILING, **filed** June 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3789, *Intalite International, N.V.* v. *Neo Ray Lighting Systems, Inc., et al.*

4,046,923, L. D. Schreiber Cheese Co., Inc., PACKAGE WITH STAGGERED PRODUCT SLICES AND PROCESS FOR PRODUCING THE SAME, **filed** Sept. 7, 1977, D.C., W.D. Pa. (Pittsburgh), Doc. 77-1032, *L. D. Schreiber Cheese Co., Inc.* v. *Clearfield Cheese Co., Inc. Plaintiff's Pat. No. 4,046,934, Inc.* v. *Clearfield Cheese Co., Inc.* Plaintiff's Pat. No. 4,046,923 determined to be invalid for obviousness under 35 U.S.C. §103. Judgment hereby entered for Defendant and action dismissed on May 20, 1982.

4,062,648, Frank J. Nola, POWER FACTOR CONTROL SYSTEM FOR AC INDUCTION MOTORS, **filed** Jan. 23, 1981, D.C.N.J. (Newark), Doc. 81-207, *Cynex Mfg. Corp.* v. *Mercury International Sales, Inc., et al.* Default Judgment for Plaintiff filed May 26, 1982.

4,062,481, Tandy Brands, Inc., PISTOL HOLSTER; **D. 239,532, same,** HOLSTER, **filed** Feb. 22, 1982, D.C., N.D. Tex. (Ft. Worth), Doc. CA4-82-89, *Tandy Brands, Inc.* v. *Smith & Wesson, Inc.*

4,064,382, Gulf & Western Industries, Inc., IGNITION DISTRIBUTOR BREAKER CONTACT POINT SET HAVING GROUNDING STRAPS DISPOSED BETWEEN CAPACITOR AND CONTACT TERMINAL, **filed** May 24, 1982, D.C. Conn. (New Haven), Doc. N-82-262, *Gulf & Western Industries, Inc.* v. *Echlin, Inc.*

4,065,866, Connecticut Valley Mfg., Inc., MUZZLE LOADING FIREARM; **Reg. No. 1,075,909,** (CVA AND DESIGN), Connecticut Valley Arms, Inc., **filed** June 14, 1982, D.C. Conn. (Hartford), Doc. H-82-568, *Connecticut Valley Arms, Inc. & Connecticut Valley Mfg., Inc.* v. *Traditions, Inc.*

4,079,225, Allan S. Warner, FIBER OPTIC/PHOTON DETECTOR FOR BRAZING MACHINE; **4,224,496,** Riordan and Mangan, METHOD AND APPARATUS FOR CONTROLLING A BRAZING MACHINE, **filed** Jan. 25, 1982, D.C.N.J. (Newark), Doc. 82-208, *Joyal Products, Inc.* v. *Irtronics, Inc.* Consent order for permanent injunction filed June 3, 1982.

4,102,383, Clopay Corp., WINDOW SHADE; **4,102,384, same, filed** Dec. 9, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6879, *Clopay Corp.* v. *Graber Industries, Inc.* Stipulated Order of Dismissal without prejudice filed Apr. 27, 1982.

4,102,384, Clopay Corp., WINDOW SHADE, **filed** Dec. 9, 1981, D.C., N.D. Ill. (Chicago), Doc. 81 C 6878, *Clopay Corp.* v. *Newell Companies, Inc.*

4,102,384. (See 4,102,383.)

4,103,862. (See 3,363,876.)

4,107,350. (See 3,913,520.)

4,111,477, Paul D. Rigali, WINDOW GUARD RELEASE, **filed** May 24, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-2559, *Paul D. Rigali* v. *Los Alimitos Ornamental Castings, Inc.*

4,112,921. (See 3,648,768.)

4,129,129, Bruce A. Amrine, VENOUS RETURN CATHETER AND A METHOD OF USING THE SAME, **filed** Apr. 1, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1618, *Minnesota Mining & Mfg. Co.* v. *C. R. Bard, Inc.*

4,150,265, Buildex, Inc., HINGE-ACTIVATED SWITCH, **filed** May 21, 1982, D.C., E.D.N.Y. (Brooklyn), Doc. 82-1418, *Buildex, Inc.* v. *Kason Industries, Inc.*

4,151,416, Richey, Wake, Wilson and Cheiky, DYNAMIC UNIFORM FLOOD CORRECTION FOR RADIOISOTOPE CAMERAS; **4,220,860,** Carlson and Jagatich, TOMOGRAPHIC SCANNER WITH CADMIUM TUNGSTATE SCINTILLATION CRYSTALS, **filed** May 4, 1982, D.C.N.J. (Newark), Doc. 82-1391, *Technicare Corp.* v. *Elscint Ltd.*

4,176,921, Carrera International Corp., EYEGLASSES HAVING REMOVABLE LENSES, **filed** Apr. 12, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2320 GLG, *Carrera International Corp.* v. *Riviera Trading Corp.* Plaintiff's Pat. No. 4,176,921 is good and valid in law. Defendant is enjoined from further infringing Plaintiff's

patent. Filed June 9, 1982. **Same, filed** June 23, 1982, D.C., S.D.N.Y., Doc. 82-Civ-4113, *Carrera International Corp.* v. *John Tworoger, Inc.*

4,177,229. (See 3,363,876.)

4,187,335, Michael D. Labate, PROCESS FOR TREATING COKE OVEN DOORS AND JAMBS TO PREVENT THE BUILD UP OF TAR THEREON; **4,251,322, same, filed** Feb. 2, 1982, D.C., N.D. Ohio (Cleveland), Doc. C-82-0244-Y, *Michael D. Labate* v. *United Refractories, Inc.* Stipulation and Order of dismissal without prejudice filed Apr. 22, 1982.

4,204,225, Wisconsin Alumni Research Foundation, REAL-TIME DIGITAL X-RAY SUBTRACTION IMAGING; **4,204,226, same,** REAL-TIME DIGITAL X-RAY TIME INTERVAL DIFFERENCE IMAGING, **filed** May 4, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82 2010 EFL, *Adac Laboratories* v. *Wisconsin Alumni Research Foundation.*

4,204,226. (See 4,204,225.)

4,208,946, Norman Van Sickle, FIREARM ALIGNMENT AND SUPPORT APPARATUS, **filed** May 21, 1982, D.C. Neb. (Omaha), Doc. 82-0-238, *William E. Venard* v. *Chief Industries, Inc., et al.*

4,210,701. (See 3,913,520.)

4,213,548, Bruce G. Wood, INSULATIVE WIDE STYLE WATCHBAND, **filed** Nov. 14, 1980, D.C., S.D. Calif. (San Diego), Doc. 80-1812-E(I), *Bruce G. Wood* v. *Ocean Trends, et al.* Dismissal with prejudice filed May 28, 1982.

4,215,431, John Nady, WIRELESS TRANSMISSION SYSTEM, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. C82-1842SC, *Sam Ash Music Corp.* v. *John Nady.*

4,220,860. (See 4,151,416.)

4,224,496, (See 4,079,225.)

4,234,785, Frederick L. Lefebvre, LIQUID LEVEL RESPONSIVE CONTROL DEVICE, **filed** May 7, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1259, *Cleveland Process Corp. & Frederick L. Lefebvre* v. *Process Technology, Inc.*

4,248,975, Kenneth P. Satterly, A RIGID SHRINK STABLE POLYURETHANE FOAM DERIVED FROM AN ADDUCT OF AN ALKYLENE OXIDE HAVING AT LEAST THREE CARBON ATOMS AND A POLYOL HAVING AT LEAST FOUR HYDROXY GROUPS AND BLOWN WITH A FLUORINATED-CHLORINATED ALKANE, **filed** Nov. 19, 1981, D.C., S.D.N.Y., Doc. 81-Civ-7062 (WCC), *Mobay Chemical Corp.* v. *Witco Chemical Corp.* Plaintiff dismisses action without prejudice on May 21, 1982.

4,251,322. (See 4,187,335.)

4,253,624, Robert E. Colbert, WELDING WIRE DISPENSER, **filed** May 19, 1982, D.C., S.D. Ohio (Dayton), Doc. C-3-82-242, *National-Standard Co.* v. *Hobart Brothers Co.*

4,287,993, Vito Licari, ADJUSTABLE RACK FOR HANGING ARTICLES, **filed** May 7, 1982, D.C.N.J. (Newark), Doc. 82-1449, *Basic Line, Inc.* v. *K-Del Corp.*

4,301,206, Medline Industries, Inc., SURGICAL WRAPPER, **filed** May 24, 1982, D.C., N.D. Ill. (Chicago), Doc. 82C3212, *Medline Industries, Inc.* v. *American Institutional Textile Co., Inc.*

4,305,091, James Carl Cooper, ELECTRONIC NOISE REDUCING APPARATUS AND METHOD, **filed** Apr. 19, 1982, D.C., N.D. Ohio (Cleveland), Doc. C82-1060, *James Carl Cooper* v. *Harris Corp., et al.*

4,310,029, Matthew Dudek, EXPANDIBLE TUBE PLUG, **filed** May 3, 1982, D.C.N.J. (Newark), Doc. 82-1389, *Exxon Corp.* v. *Matthew Dudek.*

4,314,665, Michael R. Levine, ELECTRONIC THERMOSTAT, **filed** Apr. 26, 1982, D.C., E.D. Mich. (Detroit), Doc. 82-60132, *Allen M. Krass* v. *Chester L. Davis, Jr.*

Re. 30,315, Perkin-Elmer Corp., PRECISION BASE MERCURY VAPOR LAMP, **filed** Apr. 28, 1982, D.C., N.D. Calif. (San Francisco), Doc. 82-1861 SC, *Perkin-Elmer Corp.* v. *Actinic Spectra, Inc.*

D. 239,532. (See 4,062,481.)

D. 251,833, Rubbermaid Commercial Products, Inc., DOLLY FOR REFUSE CONTAINER, **filed** June 11, 1979, D.C., E.D. Mo. (St. Louis), Doc. 79-0702, *Contico International, Inc.* v. *Rubbermaid Commerical Products, Inc.* Plaintiff is restrained and enjoined from further infringing Defendant's patent. Filed May 7, 1982.

International Nonproprietary Names for Pharmaceutical Substances

The World Health Organization has published a list of proposed drug names which are being considered for International Nonproprietary Names. The Organization allows interested persons an opportunity to make comments or objections before International Nonproprietary Names are adopted.

A copy of the list of proposed names, which was published in the Apr. 1982 *WHO Chronicle,* may be obtained by writing or calling the Office of the Director of the Trademark Examining Operation, Box 5, Patent and Trademark Office, Washington, DC 20231, telephone (703) 557-3268. Comments or objections should be sent directly to the Pharmaceuticals Unit, World Health Organization, Ave. Appia, 1211 Geneva 27, Switzerland, not later than Aug. 31, 1982. Comments or objections should refer to the drug in question, cite the proposed name, and state clearly and in appropriate detail the comments or objections (legal, technical, scientific, or other). The individual making the comments or objections should be identified.

MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

July 7, 1982.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

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Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

SN 6-047,172. (Patent 4,329,368) PROCESS FOR PRESERVATION OF STORED WOOD CHIPS. Dept. of Agriculture.

SN 6-054,926. (Patent 4,328,343) COBALT-CATALYZED ONE-STEP SYNTHESIS OF ANNULATED PYRIDEINES. Dept. of Health & Human Services.

SN 6-160,753. (Patent 4,327,710) ADDITIVES IN RESEALED ERYTHROCYTES FOR DISSEMINATING CHEMICALS VIA THE CIRCULATORY SYSTEM. Dept. of Agriculture.

SN 6-165,336. (Patent 4,328,309) METHOD FOR PRODUCING TRIPDIOLIDE TRIPTOLIDE AND CELASTROL. Dept. of Health & Human Services.

SN 6-213,446. (Patent 4,328,901) MULTILAYER PRESSURE VENT FOR EXPLOSION PROOF ENCLOSURES. Dept. of Interior.

SN 6-266,462. HISTAMINE PHOTOAFFINITY ANALOG: SPECIFIC IRREVERSIBLE ANTAGONISM OF HISTAMINE RECEPTORS BY PHOTOAFFINITY ACTUATED COMPOUNDS. Dept. of Health & Human Services.

SN 6-288,260. (Patent 4,329,337) TURKEY SEMEN EXTENDER. Dept. of Agriculture.

SN 6-346,314. THREE-ELEMENT ANTENNA. Dept. of Commerce.

SN 6-348,575. DEVICE FOR MEASUREMENT OF THE SPECTRAL WIDTH OF NEARLY MONOCHROMATIC SOURCES OF RADIANT ENERGY. Dept. of Commerce.

SN 6-348,576. STABILIZATION MECHANISM FOR OPTICAL INTERFEROMETER. Dept. of Commerce.

SN 6-148,491. (Patent 4,324,661) APPARATUS AND METHOD FOR CONTINUOUS COUNTERCURRENT EXTRACTION AND PARTICLE SEPERATION. Dept. of Health & Human Services.

SN 6-247,684. (Patent 4,327,233) METHOD FOR PRODUCING CARBOCYCLIC COMPOUNDS FROM CYCLIC SULFIDE. Dept. of Commerce.

SN 6-140,380. (Patent 4,330,090) METHOD FOR WROUGHT AND CAST ALUMINUM SEPERATION. Dept. of the Interior.

SN 6-160,752. (Patent 4,330,443) DRY CHEMICAL PROCESS FOR GRAFTING ACRYLIC AND METHYL ACRYLIC ESTER AND AMIDE MONOMERS ONTO STARCH-CONTAINING MATERIALS. Dept. of Agriculture.

SN 6-266,225. (Patent 4,330,509) SEPERATION OF ZIRCONIUM AND URANIUM. Dept. of Interior.

SN 6-284,088. HIGHLY POTENT 6-KETO-MORPHINANS BELONGING TO THE 14-HYDROXY-SERIES AND PREPARATION. Dept. of Health & Human Services.

SN 6-284,089. 6-KETO-MORPHINAN ANALGESICS. Dept. of Health & Human Services.

SN 6-351,588. METHOD FOR THE IDENTIFICATION AND PURIFICATION OF HUMAN LUNG TUMOR-ASSOCIATED ANTIGENS (HLTAA) AND CLINICAL DETECTION AND DETERMINATION OF THESE ANTIGENS. Dept. of Health & Human Services.

SN 6-259,766. INHIBTION OF NEURAL DECLINE WITH AGING. Dept. of Health & Human Services.

SN 6-329,590. COMENTITIOUS DENTAL COMPOSITIONS WHICH DO NOT INHIBIT POLYMERIZATION. Dept. of Health & Human Services.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 10, 1982

Re. 30,942	4,303,441	4,320,151	4,328,749
D. 258,496	4,305,974	4,320,186	4,328,857
D. 258,523	4,306,907	4,320,271	4,329,086
D. 264,097	4,307,112	4,320,631	4,329,150
D. 264,341	4,307,806	4,320,768	4,329,163
3,953,011	4,308,116	4,321,268	4,329,549
3,963,958	4,308,341	4,321,735	4,329,942
4,169,762	4,308,475	4,321,749	4,329,946
4,177,322	4,308,812	4,322,034	4,330,159
4,179,393	4,309,415	4,322,341	4,330,212
4,185,025	4,310,461	4,322,348	4,330,352
4,190,325	4,311,187	4,322,525	4,330,444
4,214,284	4,311,765	4,322,544	4,330,463
4,219,529	4,311,770	4,323,038	4,330,611
4,226,772	4,311,912	4,323,081	4,330,676
4,227,727	4,312,011	4,323,105	4,330,691
4,236,918	4,312,075	4,323,120	4,330,946
4,237,054	4,312,123	4,323,326	4,331,026
4,242,309	4,312,478	4,323,338	4,331,068
4,252,515	4,312,808	4,323,454	4,331,228
4,262,857	4,312,918	4,323,903	4,331,453
4,264,960	4,313,260	4,323,940	4,331,488
4,265,812	4,313,379	4,324,038	4,331,527
4,268,722	4,313,851	4,324,405	4,331,565
4,269,540	4,314,313	4,324,664	4,331,643
4,269,919	4,314,457	4,324,740	4,331,759
4,270,809	4,314,911	4,324,850	4,331,809
4,271,026	4,315,366	4,324,927	4,331,937
4,273,334	4,316,028	4,325,546	4,332,116
4,274,140	4,316,282	4,325,686	4,332,187
4,276,465	4,316,305	4,325,907	4,332,347
4,278,655	4,316,321	4,326,101	4,332,348
4,285,306	4,316,409	4,326,257	4,332,430
4,286,054	4,316,529	4,326,276	4,332,463
4,288,225	4,317,272	4,326,596	4,332,547
4,288,668	4,317,296	4,326,668	4,332,701
4,289,650	4,317,297	4,326,956	4,332,863
4,292,296	4,317,645	4,326,991	4,332,866
4,292,458	4,317,718	4,327,130	4,332,937
4,293,748	4,317,823	4,327,206	4,332,939
4,293,834	4,317,906	4,327,289	4,333,076
4,293,867	4,317,912	4,327,422	4,333,674
4,295,713	4,318,178	4,327,729	4,334,108
4,296,462	4,319,063	4,328,263	4,334,564
4,297,141	4,319,328	4,328,342	4,334,607
4,298,968	4,319,341	4,328,343	4,334,647
4,301,075	4,319,707	4,328,703	4,334,691
4,302,527	4,319,828	4,328,731	4,335,738
4,303,321	4,319,911	4,328,739	4,335,879

Disclaimers

Des. No. 262,279.—*Rallie P. Rallis,* and *Richard A. Cullity,* Los Angeles City, and *Lyle R. Tamplin,* Orange County, Calif. MOBILE SELF-POWERED HYDRAULIC LIFT. Patent dated Dec. 15, 1981. Disclaimer filed June 1, 1982, by the assignee, *Mark Industries.*

The term of this patent subsequent to Oct. 6, 1995, has been disclaimed.

3,980,791.—*Hans Peter Schulz,* Wuppertal; and *Herbert Voege,* Opladen-Bruchhausen, Germany. TETRAMISOLE AND LEVAMISOLE POUR-ON ANTHELMINTIC COMPOSITIONS AND METHODS OF USE. Patent dated Sept. 14, 1976. Disclaimer filed Apr. 30, 1981, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1-3, 11-13, 21-33, 36-44, and 47 of said patent.

4,073,797.—*Henri Ramuz,* Birsfelden, Switzerland. SULPHUR CONTAINING DERIVATIVES. Patent dated Feb. 14, 1978. Disclaimer filed May 10, 1982, by the assignee, *Hoffmann-La Roche, Inc.*

Hereby enters this disclaimer to claim 4 of said patent.

4,085,079.—*Richard C. Kmetz,* Longmeadow and *Leland P. Miner,* Wilbraham, Mass. FORMALDEHYDE SOLUTIONS STABILIZED WITH INTERPOLYMERS OF VINYL ACETATE, VINYL ACETAL AND VINYL ALCOHOL. Patent dated Apr. 18, 1978. Disclaimer filed June 14, 1982, by the assignee, *Monsanto Co.*

Hereby enters this disclaimer to claims 1, 4, 5, and 6 of said patent.

4,239,009.—*Emmett M. Cunningham,* Alexandria, Va. PORTABLE TURNTABLE FOR MICROWAVE OVEN. Patent dated Dec. 16, 1980. Disclaimer filed Apr. 5, 1982, by the assignee, *Plastics, Inc.*

The term of this patent subsequent to Aug. 12, 1997 has been disclaimed.

4,313,085.—*William C. Balchunas,* Mendham, N. J. APPARATUS FOR DETECTING ADJACENT INSULATION FAULTS IN TWO OR MORE WIRES. Patent dated Jan. 26, 1982. Disclaimer filed Apr. 20, 1982, by the assignee, *Western Electric Co., Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

4,320,849.—*Bernard Yellin,* Oak Brook, Ill. FOOD SERVING CONTAINER. Patent dated Mar. 23, 1982. Disclaimer filed May 5, 1982, by the inventor.

Hereby enters this disclaimer to claim 8 of said patent.

Dedications

Des. No. 228,728.—*Theodore R. Bergstron,* St. Paul, Minn. FIREPLACE GRATE. Patent dated Oct. 23, 1973. Dedication filedApr. 15, 1982, by the assignee, *Cardinal American Corp.*

Hereby dedicates said entire patent to the Public.

3,127,293.—*Albert Jean Trenteseaux,* Mouscron, Belgium. METHOD OF PRODUCING UNWOVEN CLOTHS AND VELVETS AND APPARATUS USED THEREFOR. Patent dated Mar. 31, 1964. Dedication filed Apr. 14, 1982, by the assignee, *A. F. Stoddard & Co. Ltd.*

Hereby dedicates said patent to the Public.

3,789,104—*Albert P. McCauley,* Chagrin Falls, Ohio. CONTROL METHOD FOR FUME INCINERATORS. Patent dated Jan. 29, 1974. Dedication filed Mar. 1, 1982, by the assignee, *SCM Corp.*

Hereby dedicates to the Public the remaining term of said patent.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

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	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF June 12, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	4-03-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-20-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-12-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	9-11-80
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-22-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-09-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-03-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	5-01-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	7-24-80

Expiration of patents: The patents within the range of numbers indicated below expire during June 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,186,004 to 3,192,535, inclusive

Plant Patents ..... Numbers 2,522 to 2,542 inclusive

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Parts 1 and 2

Revision of Patent and Trademark Fees

AGENCY: Patent and Trademark Office, Commerce

ACTION: Final Rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent and trademark cases to establish fee related procedures and fees in amounts which would comply with the requirements of either Public Law 96-517 or H.R. 6260, dependent upon which is effective on October 1, 1982. This action is necessary at this time in view of the requirements to establish fees and procedures contained in Public Law 96-517 and the requirements which would also be present under H.R. 6260 enacted as a Public Law. This final rule is being issued in two sections with the first section relating to patent fees and the second section relating to trademark fees. This final rule is also being issued in alternative form so that the proper fees and procedures will become effective on October 1, 1982, under either Public Law 96-517 or the Public Law which results from enactment of H.R. 6260. Thus, if Public Law 96-517 remains fully effective on October 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to Public Law 96-517, contained in Alternative A of each section, will become effective. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes contained herein which are common to Public Law 96-517 and H.R. 6260, as well as those specific to H.R. 6260, contained in Alternative B of each section, will become effective. Thus, the intended effect of this action is to adopt rules which will be effective on October 1, 1982, establishing patent and trademark fees and procedures regardless of whether Public Law 96-517 remains fully effective or whether H.R. 6260 has been enacted.

EFFECTIVE DATE: October 1, 1982. However, prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

FOR FURTHER INFORMATION CONTACT: As to the patent rules contact R. Franklin Burnett by telephone at (703) 557-3054 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: R. Franklin Burnett, Room 3-11A13, Washington, D. C. 20231.

FOR FURTHER INFORMATION CONTACT: As to the trademark rules contact Miss Maude Williams by telephone at (703) 557-2222 or by mail addressed to the Commissioner of Patents and Trademarks, Attention: Miss Maude Williams, Room 3-11C17, Washington, D. C. 20231.

SUPPLEMENTARY INFORMATION:

SECTION I - REVISION OF PATENT FEES

Background

A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28042-28063 and in the Official Gazette on June 29, 1982, at 1019 O.G. 57-120. An oral hearing was held on July 9, 1982. Fourteen written letters and statements were submitted. Five persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These rule changes are designed primarily to implement the Patent and Trademark Office fees which are provided for by Public Law 96-517, or which would be set in, or provided for by, the Public Law resulting from H.R. 6260.

Public Law 96-517

Public Law 96-517 presently requires that fees be established by the Commissioner for the processing of patent applications from filing through issuance or abandonment, for maintaining a patent in force, and for providing all other services and materials related to patents. Public Law 96-517 requires that by October 1, 1982, fees for the processing of patent applications, other than design patents, be set by the Commissioner to recover in aggregate 25 per centum of the estimated average cost to the Office of such processing. Similarly, fees for processing design patents are to be set to recover in aggregate 50 per centum of the estimated average cost to the Office of such processing. By October 1, 1982, fees for all other services or materials related to patents are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

Public Law 96-517 also requires that fees be set for maintaining all patents filed on or after December 12, 1980, other than design patents, in force. It also requires that maintenance fees must recover 25 per centum of the estimated cost to the Office of processing patent applications, other than design patent applications, by the fifteenth fiscal year following December 12, 1980. Under Public Law 96-517, the maintenance fees are due 3½, 7½, and 11½ years after grant of the patent.

Public Law 96-517 is presently effective and this rule change is designed to implement the fee provisions of that law if it remains fully effective on October 1, 1982. The changes which will become effective on October 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. H.R. 6260 would establish a number of statutory fees which the Commissioner is required to charge. Among the more significant of these are fees for filing a patent application, issuing, and maintaining a patent in forc . The fees for filing a patent

application and issuing a patent would be set forth in §41(a) of Title 35, United States Code, as proposed to be amended by H.R. 6260. Certain other fees, such as appeal fees, the fee for filing a disclaimer, and fees for filing petitions seeking to revive an abandoned application and for extensions of time, would also be set in §41(a) of Title 35, United States Code. Section 41(b) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would set forth the fees for maintaining a patent in force. These fees would be due 3½, 7½, and 11½ years after grant of the patent or within a grace period of six months thereafter. Section 41(c) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would provide for the acceptance of maintenance fees after the statutory grace period under certain conditions and with certain effects.

H.R. 6260 would also provide for the reduction by 50 per centum in the fees paid under §41(a) and (b) of Title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established, and to be established therefor.

Section 41(d) of Title 35, United States Code, as proposed to be amended by H.R. 6260, would also provide that the Commissioner establish fees for all other processing, services, or materials related to patents which are not covered in §41(a)-(c) of Title 35, United States Code, to recover the estimated average cost to the Office of the processing, services, or materials.

The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. H.R. 6260 includes other provisions which would be the subject of other proposals for rulemaking.

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a patent application, or during the term of a patent. A number of significant changes are made in order to implement either Public Law 96-517 or H.R. 6260.

Under H.R. 6260, and Alternative B of this rulemaking, fees under §41(a) and (b) of Title 35, United States Code, would be reduced by 50 per centum for independent inventors, small business concerns, and nonprofit organizations. H.R. 6260 would give the Commissioner authority to establish regulations defining independent inventors and nonprofit organizations. H.R. 6260 defines small business concerns by reference to §3 of the Small Business Act and regulations established by the Small Business Administration. This rulemaking, in Alternative B, implements the fee system which would be established by H.R. 6260 and lists all applicable fees. Alternative A does not include fees relating to independent inventors, small business concerns, and nonprofit organizations since such fees are not authorized by Public Law 96-517.

Another significant change relates to fees established under Public Law 96-517 and which would be established by H.R. 6260 for petitions for extensions of time to take actions required by the Commissioner in an application. H.R. 6260 would establish a fee of $50 for filing a petition for a first one-month extension of time, an additional fee of $100 for filing a petition for a second one-month extension of time which would expire two months after the end of the time period set for taking action, and an additional fee of $200 for filing a petition for a third one-month extension of time which would expire three months after the end of the time period set for taking action. A fourth one-month extension with an additional fee of $200 could be requested if additional time was available under the statute. Under H.R. 6260, the Commissioner would have authority to issue regulations providing when, within any maximum time period permitted by statute, petitions for extensions of time, and the required fee therefor, may be filed. The Commissioner would also not be precluded by H.R. 6260 from waiving the fee for filing a petition for an extension of time where the Office extends the period due to equity considerations or sufficient cause. This rulemaking implements the extension of time provisions of H.R. 6260 by permitting applicants in the majority of situations to file the petition for an extension of time and the fee at the time of and along with the filing of the response for which a non-statutory or shortened statutory time period has been set. This will reduce the amount of paperwork involved and should significantly reduce the expenses of applicants and the Office since resources now devoted to the separate processing of petitions for extensions of time will no longer be required to be expended thereon. The fees are set to provide a proper control on the number of extensions of time given. The same procedures relating to extensions of time which would be established under Alternative B and H.R. 6260 will also be established under Alternative A and Public Law 96-517. Thus, whether the rules are effective on October 1, 1982, under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B, the same procedures for obtaining extensions of time will be in effect with the only differences being in the amount of the fees.

Another significant change relates to the implementation of the fee for revival of an unintentionally abandoned application which would be authorized under H.R. 6260. H.R. 6260 would establish two different fees for filing petitions with different standards to revive abandoned patent applications. The same two fees would be applicable to petitions to accept the delayed payment of the fee for issuing a patent. Under H.R. 6260, a fee of $50 is established in §1.17(l) for filing a petition for revival under §§133 or 151 of Title 35, United States Code, in accordance with standards presently in effect where the delay resulting in the abandonment, or the delay in payment of the issue fee, was unavoidable. Under H.R. 6260, a fee of $500 is established in §1.17(m) for filing each petition for revival, or for acceptance of the delayed payment of an issue fee, where the abandonment or the failure to pay the issue fee was unintentional. A mere statement that abandonment was unintentional plus the $500 fee is all that is required in this case for this purpose. Under H.R. 6260 and this rulemaking an applicant would have a choice of which petition and fee to file seeking revival depending on the

circumstances involved. The changes discussed in this paragraph cannot be made effective without enactment of H.R. 6260 as a Public Law.

The rulemaking also provides for fees for filing certain petitions which have, in some cases, heretofore, been decided without a charge. These fees are established under Public Law 96-517 and are provided for by the amendment of §41(d) of Title 35, United States Code, which would be introduced by H.R. 6260. Under §41 of Title 35, United States Code, as amended by Public Law 96-517 or as it would be amended by H.R. 6260, fees are authorized for the processing of various petitions desiring certain actions to be taken regarding patent applications, for the recording of assignments, for reexamination of patents, and for the processing of international applications under the Patent Cooperation Treaty. In general, fees are not being required for those petitions which are supervisory in nature. For example, where applicants are petitioning from an allegedly improper action of the examiner, it is felt that such petitions should be processed and decided without charge since they are not asking for any special privilege but are attempting to correct an allegedly incorrect Office holding. The changes discussed in this paragraph will be in effect on October 1, 1982, whether the rules become effective under Public Law 96-517 and Alternative A, or under H.R. 6260 and Alternative B.

Many of the fees currently set forth in §1.21 are being increased to reflect the cost of currently performing that service.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this proposal under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 1-54. Those changes which relate only to Public Law 96-517 appear as Alternative A and are numbered 55-62. Those changes which are dependent upon enactment of H.R. 6260 appear as Alternative B and are numbered 63-71. The changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. The changes contained in Alternative A will become effective on October 1, 1982, if H.R. 6260 does not become a Public Law prior to that date. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, Alternative B will become effective on October 1, 1982, in which case Alternative A will not become effective.

Rule Changes Common To Public Law 96-517 and H.R. 6260

The following sections are changed, effective October 1, 1982, under either Public Law 96-517 or H.R. 6260:

Section 1.11 is amended to change the reference for the reexamination request fee to §1.20(c).

Section 1.12 is amended to break the section into four paragraphs. Paragraph (a) maintains current practice but adds specific reference to §1.19(a)(5) which sets the cost of copies.

Paragraph (b) maintains current wording except for inserting "patent" after "abandoned" and changing "his" to "applicant's". Paragraph (c) includes new language relating to obtaining copies of assignment records not open to the public. Access can be obtained only with the applicant's permission or by petition with fee to the Commissioner for such access in particular situations. No change in the showing required by petition to obtain access is intended by this amendment. Paragraph (d) contains present language except for reference to the specific rule which sets forth the charge for time consumed in making assignment searches.

New paragraph (e) of §1.14, sets forth the two ways in which access can be obtained to patent applications which are not open to the public. The two ways are (1) by petitioning and paying the petition fee and approval of the Commissioner of such petition and (2) by obtaining written approval from the applicant.

New §1.19 provides fees for copies of various documents supplied by the Office. The fees have been grouped into 5 paragraphs. New paragraph (a) provides fees for uncertified copies. Subparagraphs (a)(1) and (2) indicate the prices of printed patent copies. Subparagraph (a)(3) provides a single fee for a copy of an application, as filed, for each 50 pages, or fraction thereof. This practice should make it much easier to determine the amount of the required fee. Subparagraph (a)(4) sets a single fee for a copy of each 100 pages, or fraction thereof, of a patent file wrapper. Subparagraph (a)(5) provides for a charge of 30 cents per page for copies of Office records other than those covered by subparagraphs (a)(1) through (4). Subparagraph (a)(6) provides a fee for a microfiche copy of a microfiche.

Paragraph (b) of §1.19 sets fees for certified copies of Office documents. Subparagraph (b)(1) sets a fee for certifying Office records. Subparagraph (b)(2) provides a single fee for searching assignment records, preparing an abstract of the title and certification thereof. Subparagraph (b)(3) provides a fee for comparing copies not prepared by the Office prior to certification in order to provide basis for certification. Paragraph 1.19(c) sets the fees for subscribing to all of the patents issued annually in particular subclasses. This charge is in addition to the normal copy charge under §1.19(a)(1) and (2). Paragraph 1.19(d) sets the fee for providing patent copies to libraries under 35 U.S.C. 13. Paragraph 1.19(e) provides fees for lists of United States patents in particular subclasses.

Section 1.21 is amended to contain those miscellaneous fees which do not relate to the topics covered in §§1.16-1.20. All of the fees in §1.21 are established under the authority given the Commissioner by 35 U.S.C. 41(d) as amended by Public Law 96-517 or as proposed in H.R. 6260. Paragraph 1.21(a) establishes fees for admission to the examination for registration to practice, registration, reinstatement and issuance of certificates of good standing of patent attorneys and agents. Subparagraph 1.21(b)(1) sets forth the fee for establishing and reinstating deposit accounts, while subparagraph 1.21(b)(2) sets forth the fee due when the balance at the end of each month is below $40. Paragraph 1.21(c) sets the fee for filing a disclosure document.

Paragraph 1.21(d) sets the fee for renting a delivery box. Paragraph 1.21(e) sets the fee for an international-type search report. Although all national applications now receive what is known as an international-type search, if a report thereof is desired in addition to an Office action, the fee set in §1.21(e) is required. Paragraph 1.21(f) sets a fee for searching Office records for purposes not otherwise specified. Paragraph 1.21(g) sets the fee for tokens for copying machines. Paragraph 1.21(h) sets the fee for recording assignments, agreements, and other documents. Paragraph 1.21(i) sets forth the fee for publishing a notice of availability of a patent for licensing or sale in the Official Gazette. Paragraph 1.21(j) sets the fee for the Office providing a duplicate or replacement of a permanent Office user pass. Paragraph 1.21(k) indicates that the Commissioner may specify charges for items and services not otherwise specified at a level to recover the actual cost of providing such an item or service by the Office.

Section 1.24 is revised so that the denomination of coupons sold by the Office will be in more convenient amounts.

Section 1.25 is amended to provide, in paragraph (a), a reference to the fee for establishing a deposit account and a service charge if the end of the month balance is below $40.00. Paragraph (b) is amended by revising the present sentence to refer to post-issuance fees and by adding a second sentence which would specifically provide in the regulations for the possibility of an applicant giving a general authorization to charge any fee due under §§1.16-1.18 in a particular application to a deposit account during the entire pendency of the application. This general authorization would not apply after the patent issues, e.g., to maintenance fees. The last sentence of paragraph (b) permits fees during reexamination to be charged to a deposit account by filing an authorization with the request for reexamination.

Section 1.26 is amended to provide in paragraph (a) that a withdrawal of a request for an oral hearing will not entitle appellant to a refund. Paragraph 1.26(a) raises the amount which will not be refunded without specific request from fifty cents to one dollar. Paragraph (b) relating to refunds of international search fees during subsequent examination of a national application is deleted since such refunds are now covered by reductions in the appropriate fees paid under §1.445 rather than solely by direct refunds. Paragraph (c) is amended to bring the spelling of "requester" into conformance with that used in other sections of the regulations.

Section 1.45 is amended to provide in paragraphs (b) and (c) for a petition and petition fee to be filed to correct misjoinder of inventorship situations in pending applications. The fee will cover the additional time required by the Office to process such applications.

Section 1.47 is amended to provide for petitions and fees for filing applications signed by less than all inventors, or a person not the inventor.

Section 1.51 is amended to refer to the filing fees in new §1.16 and to add a new paragraph (c) indicating that applicants may file authorizations to charge fees required under any of §§1.16-1.18 to deposit accounts.

Section 1.52 is amended to add a reference in paragraph (a) to new paragraph (d). New paragraph (d) provides in the rules for filing an application in a language other than English if a verified English translation and fee under §1.17(k) are timely submitted.

Section 1.55 is amended in paragraph (b) to require a petition and fee for processing priority papers submitted after the issue fee is paid.

Section 1.75 is amended to add a reference to §1.16 and a sentence referring to the fee for multiple dependent claims set forth in §1.16(d).

Section 1.85 is amended to delete the sentence relating to mounting of informal drawings.

Section 1.86 is removed to delete the reference to the Office draftsman making drawings since such service is no longer available.

Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d). Revised paragraph (a) refers to paragraph (b) and added paragraphs (c) and (d). Paragraph (c) requires a petition but no fee where the basis for the petition to make special is the applicant's age or health or the impact of the invention on improving the environment or conservation of energy. Paragraph (d) requires a petition and the fee set forth in §1.17(i) for petitions to make special on grounds other than those above.

Section 1.103 is amended in paragraph (a) to provide for filing a petition and the fee set forth in §1.17(i) for a suspension of action except that no fee would be required where the reason for the suspension is the fault of the Patent and Trademark Office. Paragraph (b) is amended to clearly indicate that suspensions are directed to actions by the Office and not responses by the applicant.

Section 1.104, paragraph (d) is amended to change the fee reference to correspond to §1.21(e).

Section 1.134 is added to indicate that unless applicant is notified of any non-statutory or shortened statutory period in an Office action, a maximum period for response of six months is allowed.

Section 1.135 is amended to provide that if no response is filed within the time set in the Office action under §1.134 or as it may be extended under §1.136, the application will be abandoned unless an Office action indicates that another consequence, such as disclaimer, will take place. Paragraph (b) is amended to include a reference to paragraph (a). Paragraph (c) is amended

to add that applicant's reply must be a bona fide attempt to respond as well as to advance the case to final action in order for applicant to be given an opportunity to supply any omission.

Section 1.136 is amended to revise the title and provide for two distinct procedures to extend the period for action or response in particular situations. The procedure which is available for use in a particular situation will depend upon the circumstances. Paragraph 1.136(a) permits an applicant to file a petition for extension of time and a fee as in §1.17(a), (b), (c), or (d) up to four months after the end of the time period set to take action except (1) where prohibited by statute, (2) in interference proceedings, or (3) where applicant has been notified otherwise in an Office action. The petition and fee can be filed prior to or with the response. The filing of the petition and fee will extend the time period to take action up to four months dependent on the amount of the fee paid except in those circumstances noted above. Paragraph 1.136(a) will effectively reduce the amount of paperwork required by applicants and the Office since the extension will be effective upon filing of the petition and payment of the appropriate fee and without acknowledgment or action by the Office and since the petition and fee can be filed with the response. Paragraph (b) provides for requests for extensions of time upon a showing of sufficient cause when the procedure of paragraph (a) is not available. Although the petition and fee procedure of §1.136(a) will normally be available within 4 months after a set period for response has expired, an extension request for cause under §1.136(b) must be filed during the set period for response. The sentence in paragraph (b) relating to who may grant an extension under paragraph (b) is eliminated thereby providing additional flexibility to designate persons to act on requests under paragraph (b). Extensions of time in interference proceedings are governed by §1.245.

Section 1.165, paragraph (b) is amended to delete therefrom the last sentence which refers to a fee for mounting copies. Since little or no need has been found for this provision in the rules, it is deleted.

Section 1.171, as amended, adds a reference to §1.19(b)(2) which sets forth the fee for title reports.

Section 1.177 is amended to require a petition and fee as set forth in §1.17(i) where it is desired that divisions of a reissue issue on different dates.

Section 1.181 is amended to indicate in paragraph (d) that if a petition to the Commissioner is filed under the provisions of a section which requires a petition fee and the required fee is not paid, the petition will be dismissed. The amendment to paragraph (g) deletes the reference to §1.183.

Section 1.182 is amended to add a sentence requiring any petition filed under this section to be accompanied by the petition fee set forth in §1.17(h).

Section 1.183 is amended to specifically refer to the inherent authority of the Commissioner to suspend or waive the rules at the Commissioner's initiative. The amendment also indicates the Commissioner's authority to designate others to act for the Commissioner in appropriate circumstances. The rule language also requires the payment of the petition fee set forth in §1.17(h) if a petition to suspend or waive the rules is filed.

Section 1.191 is amended to change the fee reference for filing a notice of appeal to §1.17(e) and delete the word "primary" since some actions which are subject to appeal are not made by a "primary" examiner.

Section 1.192, paragraph (a), is amended to refer to the fee for filing an appeal brief set forth in §1.17(f). The present language requiring a showing of sufficient cause for extensions of time for filing the brief and an indication that an oral hearing is desired at the time of filing the brief are removed from paragraph 1.192(a). Under the amendment to paragraph 1.192(a), the provisions of §1.136 will apply to extensions of time for filing the brief. The time for requesting an oral hearing is now set in §1.194(b).

Section 1.194 is amended to revise paragraphs (b) and (c) to refer to the fee for oral hearing in §1.17(g) and to indicate in paragraph (b) that any request for an oral hearing must be made within one month after the mailing date of the examiner's answer.

Section 1.197, paragraph (b), is amended to modify the last sentence relating to extensions of time to make the provisions of §1.136 applicable thereto. Paragraph 1.197(b) is also amended to limit requests for rehearing, reconsideration or modification of a Board decision to one. This will not significantly change present practice since such requests are now required to be filed within thirty days from the date of the original decision.

Section 1.231, paragraph (a)(1), is amended to change the reference to the fee for filing a request for reexamination to §1.20(c).

Sections 1.245 and 1.246 are amended to indicate that the provisions of §1.136 do not apply to time periods in interferences.

Section 1.263 is amended to add a reference to the fee for filing a disclaimer contained in §1.20(d).

New section 1.268 is added to provide a rule relating to the filing of interference settlement agreements. The rule generally follows 35 U.S.C. 135(c) and provides for filing of petitions and fees in paragraphs 1.268(b) and (c).

Section 1.292, paragraph (a), is amended to require the payment of the fee set forth in §1.17(j) with any petition for the institution of public use proceedings.

Section 1.304, paragraph (a), is amended to provide for extension of the time period for filing an appeal or civil action to be

subject to the provisions of §1.136 and refer to the Court of Appeals for the Federal Circuit rather than to the Court of Customs and Patent Appeals.

Section 1.311 is amended to designate the present section as paragraph (a) and revise it in several ways. Paragraph (a) indicates that the notice of allowance will be sent to the correspondence address as indicated under §1.33. The issue fee (§1.18) is indicated as being due 3 months from the date of mailing of the notice of allowance. Paragraph 1.311(b) permits an authorization to be filed either before or after the mailing of the notice of allowance to charge the issue fee to a deposit account.

Section 1.312 is amended to divide the section into two paragraphs and require a petition and payment of the fee under §1.17(i) for any amendment filed after payment of the issue fee.

Section 1.313 is amended to provide in paragraph (a) clear basis for the Office withdrawing applications from issue on its own initiative or upon petition by applicant accompanied by the petition fee set forth in §1.17(i). Any accompanying amendment must comply with the requirements of §1.312. Paragraph (b) clarifies when an application will be withdrawn from issue after assignment of the issue date and patent number.

Section 1.314 is amended to revise the wording to eliminate reference to a portion of the issue fee and adds reference to the possibility that an application in which the issue fee was paid can be withdrawn from issue under §1.313 or the issuance thereof deferred pursuant to a petition by the applicant and the payment of the petition fee under §1.17(i).

Section 1.321 is amended to include references in both paragraphs (a) and (b) to the statutory disclaimer fee in §1.20(d) and delete the reference to §1.21.

Section 1.324 is amended to include reference to the fee in §1.20(b) and change the word "application" to "petition".

Section 1.331, paragraph (a), is amended to add a new sentence which gives the citation of the fee for recording assignments and to indicate that instruments recorded on the Government register under Part 7 of Title 37, Code of Federal Regulations, do not require payment of such fee.

Section 1.332 is amended to refer to the fee in §1.21(h) for recording an assignment.

Section 1.334 is amended to divide the rule into three paragraphs and also require an address of the assignee so that correspondence can be directed to the assignee if required. New paragraph (c) provides for filing a petition and the fee set in §1.17(i) seeking to have the patent issue to the assignee where such assignment has not been recorded at the time the issue fee is paid.

Section 1.341, paragraph (h), is amended to refer to the fee set forth in §1.21(a)(2) for registration of an attorney or agent.

Section 1.347 is amended to add a sentence referring to the fee set forth in §1.21(a)(3) for reinstatement of an attorney or agent.

Section 1.445 is amended to increase the PCT transmittal fee and search fee to a level needed to cover the cost of performing the required functions. Paragraph 1.445(a)(2) is also amended to provide, in effect, for a reduction in the international search fee due to the United States Patent and Trademark Office as an International Searching Authority where a corresponding United States national application with fee has been filed. In addition, paragraph 1.445(a)(4) is amended to credit the national fee required under §1.16(a)-(d) where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. The supplemental search fee for inventions in addition to the first, where lack of unity of invention has been found, is reduced since the present fee is more than is required to cover the costs. The national fee amount is the same as the national application filing fees in §1.16(a)-(d).

Section 1.446(b) is revised to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

Section 1.451 is amended in paragraph (b) to revise the citation of the fees for a certified copy.

Section 1.510 is amended to cite the section which sets forth the fee for requesting reexamination. There is no change in the amount of this fee.

Alternative A - Rule Changes Under Only Public Law 96-517

The following sections will become effective under only Public Law 96-517 on October 1, 1982, unless H.R. 6260 is enacted as a Public Law prior to that date:

New §1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $150 which will be required in all original patent applications. The term "original" as used in the regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $15 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $5 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple

dependent claim. Paragraph 1.16(d) provides for a new fee of $50 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. Paragraph 1.16(e) is reserved under this Alternative (Alternative A). New paragraph 1.16(f) provides for a filing fee of $63.00 for a design application.

Paragraphs 1.16(g) and (h) establish the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief by appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amounts of the fees are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable.

New §1.18 sets the amount of the issue fees pursuant to the authority contained in Public Law 96-517. New paragraph (a) establishes an issue fee of $250.00 for all original and reissue

patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent at a uniform $88.00 even though terms of 3½, 7, or 14 years may be requested. New paragraph (c) establishes the issue fee for a plant patent.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under §1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after December 12, 1980 and up to the date of enactment of H.R. 6260 are established at this time in paragraphs 1.20(e)-(g). The fees in paragraphs 1.20(e)-(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities, i.e., independent inventors, small business concerns, and nonprofit organizations. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.137, as amended, designates the existing section as paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, and states when the showing that the delay was unavoidable must be verified. Paragraph 1.137(b) is reserved under this Alternative (Alternative A). Paragraph (c) requires that any petition for revival under paragraphs (a) or (b) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application as being $88.00. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.17(l) where the delay in payment was unavoidable and states when showings that the delay was unavoidable must be verified. Paragraph 1.155(c) is reserved under this Alternative (Alternative A). Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where any petition under this section is not filed within six months of the date of abandonment.

Section 1.316 is amended to clarify the language and to delete reference to the fee specified in the notice of allowance. Paragraph (b) is amended to provide for petitions for revival with the fee in proposed §1.17(l) where the delay in payment was unavoidable and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is reserved under this Alternative (Alternative A). Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where any petition under this

section is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to October 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in §1.17(l) where the delay in payment was unavoidable and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is reserved under this Alternative (Alternative A). Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where any petition under this section is not filed within six months of the date of lapse.

Alternative B - Rule Changes Under H.R. 6260

The following sections will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to that date:

Section 1.16 in Alternative B establishes in the regulations those statutory fees which would be charged by the Commissioner for filing patent applications under H.R. 6260. Section 1.16 also includes additional filing fees set in 35 U.S.C. 41(a)(l) to cover the cost of examining complexities presented by certain applications, e.g., applications containing more than a specified number of claims and any application containing a multiple dependent claim. Section 1.16 also provides that fees will be charged when the number of claims is increased above the specified number or when a multiple dependent claim is first presented, whether on filing or at a later point in processing.

Under 35 U.S.C. 41(a) as it would be amended by H.R. 6260, the filing fee for an original patent, except in design or plant cases, is $300. In addition, on filing or on presentation at any other time, $30 is due for each claim in independent form which is in excess of three, $10 is due for each claim (whether independent or dependent) which is in excess of twenty, and $100 is due for each application containing a multiple dependent claim. The latter fee is a one-time charge per application due the first time a multiple dependent claim is presented for examination. For the purpose of computing fees, a multiple dependent claim as referred to in §112 of Title 35, United States Code, or any claim depending therefrom, is considered as separate dependent claims in accordance with the number of claims to which reference is made.

The fees in §1.16 are reduced by 50 per centum for applications filed by small entities, i.e., independent inventors, nonprofit organizations and small business concerns, in accordance with H.R. 6260. Therefore, two fees are listed under each paragraph.

New §1.16 relates to application filing fees. Paragraph (a) sets a basic filing fee of $300 which will be required in all original patent applications. The term "original" as used in the

regulations means "non-reissue". An "original" application can be a first filing, a division, a continuation, or a continuation-in-part application. Paragraph 1.16(b) provides for an additional fee of $30 for each independent claim in excess of 3 in an original application. New paragraph 1.16(c) provides for an additional fee of $10 for each claim in excess of 20, whether independent or dependent. A multiple dependent claim is considered to be that number of claims to which direct reference is made. Also, any claim which refers to a multiple dependent claim is considered for fee calculation purposes to be the number of claims to which direct reference is made in the multiple dependent claim. Paragraph 1.16(d) provides for a new fee of $100 in each application which contains one or more multiple dependent claims. The note following paragraph 1.16(d) is intended to clearly indicate that the applicant, attorney, or agent may pay any additional fees required under paragraphs (b), (c) and (d) of §1.16, or cancel such claims without payment of such additional fees, either at the time of filing or by the time a response is due to any notice of fee deficiency mailed by the Office. If the fees are not paid or the claims cancelled by the end of the period set for response to the notice of fee deficiency, the application will be held abandoned. New paragraph 1.16(e) establishes the amount of the surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application. This fee is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. New paragraph 1.16(f) provides for a filing fee of $125.00 for a design application.

Paragraphs 1.16(g) and (h) incorporate into the regulations the filing fees for plant and reissue applications.

Paragraphs 1.16(i) and (j) set forth the additional claim fees required in reissue applications based on claims in excess of those in the original patent.

New §1.17 relates to patent application processing fees which are normally due during the time a patent application is pending. New paragraphs (a), (b), (c) and (d) provide for the payment of an extension fee for obtaining an automatic extension of time upon filing a petition as provided for in §1.136(a). The extension fee can be paid during the period for which an extension of time to respond is desired, or after the original period for response has expired, provided that any maximum statutory period which may apply has not expired. The fees set forth in §1.17 are the total fees required under §1.136(a) for the periods indicated and any extension fee previously paid to extend a particular period is credited toward the total extension fee required. Paragraph (e) sets forth the fee for filing a notice of appeal to the Board of Appeals. Paragraph (f) sets forth the fee for filing an appeal brief by appellant. Paragraph (g) provides for a new fee for requesting an oral hearing before the Board of Appeals. Paragraphs (h) and (i) set forth fees which will be required with petitions to the Commissioner under those sections of the regulations which specifically indicate that such petition fees are required. The amounts of the fees

are set at two levels based on the degree of complexity of the petitions in order to recover the estimated average cost to the Office of processing the petitions. Paragraph (j) provides for a fee to be paid with any petition for institution of a public use proceeding to cover the estimated average cost of such a proceeding. Paragraph (k) sets forth a new fee for processing an application filed with a non-English language specification. The fee will cover the additional processing costs involved in such applications. New paragraph (l) incorporates into the regulations the fee which will be charged for filing a petition to revive or to accept late payment of the issue fee where the delay was unavoidable. New paragraph (m) incorporates into the regulations the fee which will be established in 35 U.S.C. 41(a)7, as amended by H.R. 6260, to be charged for a petition for the revival of an unintentionally abandoned application for patent or for the unintentionally delayed payment of an issue fee.

Since paragraphs 1.17(h), (i), (j) and (k) are established under the authority given the Commissioner under 35 U.S.C. 41(d) as it would be amended by H.R. 6260, only one level of fee is set. H.R. 6260 only provides for the reduction of fees charged to small entities of those fees established in 35 U.S.C. 41(a) and (b).

New §1.18 sets the amount of the issue fees specified by H.R. 6260. New paragraph (a) establishes an issue fee of $500.00 for all original and reissue patents except for designs and plants. New paragraph (b) sets the amount of the issue fee for a design patent. New paragraph (c) sets forth the issue fee for a plant patent. All fees in §1.18 will be reduced by 50 per centum for small entities.

New §1.20 sets fees for various post-issuance functions performed by the Office. New paragraph (a) sets forth a fee for providing a certificate of correction of an applicant's mistake. New paragraph (b) sets a fee to accompany a petition to correct inventorship in a patent under §1.324. New paragraph (c) transfers the $1,500.00 fee for requesting reexamination from present §1.21(x) to this new section. New paragraph (d) provides for a fee for filing a disclaimer under §1.321. Maintenance fees required by Public Law 96-517 and which would be set in H.R. 6260 are placed in this section. Specific maintenance fees, which are required by Public Law 96-517, for those patents resulting from applications filed on and after December 12, 1980 and up to the date of enactment of H.R. 6260 are being established at this time in paragraphs 1.20(e)-(g). New paragraphs 1.20(h)-(j) incorporate into the regulations the maintenance fees which would be provided in 35 U.S.C. 41(b) by H.R. 6260. The fees in paragraphs 1.20(a)-(c) are only set at one level because they are established under 35 U.S.C. 41(d). The fees in paragraphs 1.20(e)-(g) are only set at one level because they are established under Public Law 96-517 and are not subject to reduction for small entities. The details implementing the payment of maintenance fees are not being established at this time.

Section 1.66 is amended to provide for the use of an apostille of a foreign official to attest to oaths or affirmations made in foreign countries in accordance with 35 U.S.C. 115 and 261, as amended by H.R. 6260.

Section 1.137, as amended, designates the existing section as part of paragraph (a), adds a reference to the new fee under §1.17(l) for a petition for revival where the delay which resulted in abandonment was unavoidable, indicates that the petition must be promptly filed, and states when the showing that the delay was unavoidable must be verified. New paragraph 1.137(b) provides for filing a statement and a fee under §1.17(m) for revival of an application which was unintentionally abandoned, and also indicates when such petitions can be filed. Paragraph (c) requires that any petition for revival under paragraph (a) of §1.137 be promptly filed and that a terminal disclaimer, equivalent to the period of abandonment of the application, be filed with any petition under paragraph (a) filed more than six months after the date of abandonment.

Section 1.155 is amended to refer in paragraph (a) to §1.18(b) which sets forth the issue fee for a design application. Paragraph 1.155(b), as amended, includes a reference to the fee for delayed payment of the issue fee set forth in §1.17(l) where the delay in payment was unavoidable, indicates that the petition must be promptly filed, and states when showings that the delay was unavoidable must be verified. New paragraph 1.155(c) provides for acceptance of the late payment of the issue fee where the delay was unintentional upon petition and payment of the fee set forth in §1.17(m). New paragraph 1.155(c) also indicates when such petitions can be filed. Paragraph 1.155(d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where petition under paragraph (b) of §1.155 is not filed within six months of the date of abandonment.

Section 1.316 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for revival of applications abandoned for failure to pay the issue fee. Paragraph (b) is amended to provide for petitions for revival with the fee in §1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions for revival with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of abandonment of the application where a petition under paragraph (b) of §1.316 is not filed within six months of the date of abandonment.

Section 1.317 is amended to implement the statutory provisions of 35 U.S.C. 41(a) with regard to petition fees for patents lapsed for failure to pay the remaining balance of the issue fee. Paragraph (a) is amended to show that it applies only to patents in which the issue fee was paid prior to October 1, 1982. Issue fees paid on or after that date will be in accordance with §1.18. Paragraph (b) is amended to provide for petitions with the fee in

§1.17(l) where the delay in payment was unavoidable, to indicate that the petition must be promptly filed, and to state when showings that the delay was unavoidable must be verified. Paragraph (c) is added to provide for petitions with the fee in §1.17(m) where the delay was unintentional. New paragraph (c) also indicates when such petitions can be filed. Paragraph (d) is added to require a terminal disclaimer equivalent to the period of lapse of the patent where a petition under paragraph (b) of §1.317 is not filed within six months of the date of lapse.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on a number of the sections. All of the comments, including the written comments and the oral testimony, were considered in adopting the changes set forth herein.

Written comments were received from three patent law groups and eleven individuals. The three patent law groups were (1) the American Patent Law Association whose membership includes several thousand lawyers involved in the practice of law before the U.S. Patent and Trademark Office; (2) the Patent, Trademark and Copyright Section of the Virginia State Bar; and (3) the Patent, Trademark and Copyright Law Section of The Bar Association of the District of Columbia.

Oral comments were presented at the hearing on behalf of two patent law groups and by 3 individuals on their own behalf.

These comments appear below along with responses thereto.

Comments received relating to §§1.9, 1.27 and 1.28 and the forms of Part 3 are not discussed in substance in this rule change since additional time for submitting written comments is provided until August 13, 1982. All comments presented to these rules will be discussed in a later rule promulgation.

Comment: One person argued that it is unreasonable to require fees to lengthen a shortened statutory period.

Reply: A shortened statutory time is provided for by statute. The shortened period helps reduce patent pendency time and speed the disclosure of technology and information about patent rights. Many applicants can reply within the present three month shortened period which has been in effect for over fifteen years. The fee for extending the time provides a positive method for applicants to obtain an extension of time while still expediting the prosecution of their applications.

Comment: Another person commented that H.R. 6260 should be rejected in that the fee levels are too high.

Reply: The consideration of the merits of H.R. 6260 is not before the Office in this rule change.

Comment: Three patent bar groups and two individuals presented comments relating to the effect of the new extension of time fees

in §1.17 and the effect thereof on the current practice of granting an automatic one-month extension of time if a timely first response to a final rejection is filed by the applicant.

Reply: The Office plans to terminate the automatic one-month extension of time practice on October 1, 1982. It is felt that the extensions of time which are readily available under §§1.17 and 1.136 will meet the needs of applicants. The amount of the fees required to obtain an extension will be the same for periods of response before and after final rejection.

Comment: One suggestion was made to permit the filing of an appeal without the appeal fee where the Office has not acted on a timely response after final rejection by applicant.

Reply: Such a procedure is not possible under the provisions of H.R. 6260 since it calls for the appeal fee "On filing an appeal" in §41(a)6.

Comment: Two comments were received requesting that the rules be changed to make the due date for paying the fee for an oral hearing on appeal after the examiner's answer on appeal.

Reply: A change in the rules has been made to provide that the fee for an oral hearing is due no later than one month after the date of mailing of the examiner's answer.

Comment: Two comments were received requesting that no charge for revival of an abandoned application be made where the abandonment resulted from the non-receipt of an Office action by the applicant.

Reply: It is present Office practice to remail any Office action which is not received at applicant's correspondence address and start anew the response period. This procedure will continue in the future under the revised rules.

Comment: Three patent bar groups and two individuals indicated that the proposed deletion of the refund provisions due to PCT search reports in §1.26(b) and §1.446(b) would make the cost of filing under the Patent Cooperation Treaty prohibitively high and does not recognize the benefit of an earlier search on a corresponding application.

Reply: In view of these comments, proposed §1.445(a)(2) and (4) and §1.446(b) have been amended to provide a credit of $250 where there is a corresponding application.

Comment: One individual requested that the multiple dependent claim practice set forth in §1.75(c) be changed to permit one multiple dependent claim to refer to another multiple dependent claim as permitted under European practice.

Reply: This suggestion cannot be adopted since it is contrary to 35 U.S.C. 112 and cannot therefore be changed by rule.

Comment: One suggestion was made to change "official" to "Office" in §1.135(b).

Reply: The suggestion has been adopted.

Comment: One suggestion was made to allow refund of the oral hearing fee if an oral hearing is not held.

Reply: This suggestion was not adopted since such refund is not appropriate in view of the fact that the fee is stated to be "for requesting an oral hearing" and not the actual conduct thereof.

Comment: Three patent bar groups raised the question as to whether an applicant would be permitted to revive an unintentionally abandoned application under §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a) and suggested that this be made clear when the proposed rules are promulgated.

Reply: Yes, an applicant under certain conditions could use §1.137(b) after having been unsuccessful in the unavoidable approach under §1.137(a).

Comment: Several comments related to the possibility of reviving applications unintentionally abandoned up to 15 years ago.

Reply: In view of the comments received, §1.137(b) is being implemented to provide only for the revival of applications which were unintentionally abandoned for a reasonable but limited period of time. This should create no substantial problems in regard to intervening rights situations. It would permit some greater flexibility than that originally proposed but should have no significant effect on the current case backlog, pendency or number of interferences pending.

Comment: One comment was received pointing out that the availability of an "unintentional abandonment" revival under §1.137(b) should not result in stricter holdings in "unavoidable abandonment" revival petitions under §1.137(a).

Reply: The Office plans to continue to use the current criteria used to decide petitions to revive applications unavoidably abandoned.

Comment: One written comment questioned whether the Commissioner has statutory authority to revive unintentionally abandoned applications.

Reply: If Congress did not intend the Commissioner to have such authority there would have been no reason to establish fees in §41(a)7 in H.R. 6260. The legislative history of H.R. 6260, House Report No. 97-542 (Committee on the Judiciary), also makes the Congressional intent clear. The provisions in H.R. 6260 relating to unintentional abandonment are substantive in addition to setting the fee.

Comment: One letter questioned what is intended by the statement in §1.137(b) that the Commissioner may require additional information where there is a question whether the abandonment was unintentional.

Reply: Additional information would be required only where there is an indication that the abandonment was intentional, for example, where an express abandonment has been filed. The record should be clear how such an express abandonment was unintentional if the petition is to be granted.

Comment: One comment raised the question as to whether in a petition to revive on grounds that the delay was unavoidable under §1.137(a), it would be sufficient that a registered attorney's statement be submitted which merely recites facts as related to him or her by another.

Reply: Statements must be made, where possible, by the person having direct personal knowledge of the facts. No change in the "showing" required or the persons making them is intended in such petitions. The rule merely clarifies that a statement by a registered attorney or agent need not be in the form of an oath or declaration.

Comment: One comment suggested that §1.317 be changed to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Reply: Section 1.317 has now been changed to provide for this lapse situation.

Comment: Three patent bar groups and one individual indicated that a full credit of the amount equal to the international search fee be made where both a U.S. national and international search are made by the United States Patent and Trademark Office.

Reply: While a complete credit is not considered proper in view of additional processing work (including searching) required in the second application, a credit of $250 has been provided in revising §1.445(a)(2) and (4).

Comment: One person commented that the term "patent" should be inserted after "abandoned" in §1.12(b).

Reply: The suggestion has been adopted.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of other changes which have been made as a result of the comments received and further review of the proposed rulemaking are identified below.

Implementation of the changes to §1.9, new §§1.27 and 1.28, and the deletion of Part 3 are being deferred for further comments by August 13, 1982. See the discussion below.

Subparagraph (a)(5) of §1.19 has been changed from that proposed by referring to subparagraphs (1) through (4) rather than (3) and (4) in order to clarify that copies of patents cannot be ordered at the rate set in subparagraph (a)(5). Instead, copies of patents must be ordered under paragraphs (a)(1) and (2) of §1.19.

Section 1.24 has been changed from that proposed to provide for the sale of 40-cent coupons. Coupons in this denomination may be useful in view of the charge of forty cents for a printed copy of a registered mark in §2.6(m) of Alternative A of the trademark rules.

Sections 1.137, 1.155 and 1.316 have been changed from that proposed in Alternative B to further specify the conditions under which unintentionally abandoned applications can be revived.

Sections 1.192 and 1.194 have been changed from that proposed so as to allow a request for an oral hearing and the payment of the required fee therefor to be made one month after the date of the examiner's answer. Previously, appellant was required to indicate a desire for an oral hearing at the time of filing the brief. The sections will now permit appellant to consider the examiner's answer before deciding whether to request an oral hearing and pay the required fee.

Section 1.317 has been changed in Alternative B to provide for the situation where there was a lapse in a patent due to the unintentional delay in paying a balance of issue fee due.

Section 1.445(a)(2) and (4) have been changed from that proposed to provide for a reduction in the international search fee where there has been a corresponding United States national application and a credit to the national fee where an international search fee has been paid in a corresponding international application and the international search has been made by the United States Patent and Trademark Office.

Section 1.446(b) has been changed from that proposed to permit a refund of a portion of the search fee to the extent set forth in §1.445(a)(4), if such refund is requested at the time of paying the national fee.

IMPLEMENTATION OF PATENT FEE REVISION

The effective date of the patent fee revisions contained in this rulemaking is October 1, 1982. The changes which will become effective on October 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A. The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to October 1, 1982. The rule changes in Alternative A will become effective on October 1, 1982, unless H.R. 6260 is enacted as a Public Law prior to October 1, 1982. If Alternative A becomes effective on October 1, 1982, the rule changes in Alternative B will not become effective on October 1, 1982. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on October 1, 1982, in which

case the rule changes in Alternative A will not become effective on October 1, 1982.

Any fee which is due and payable on or after October 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of specific sections is set forth below:

IMPLEMENTATION OF SPECIFIC SECTIONS

The various sections will be implemented in the manner set forth below:

§1.16 National application filing fees.

Any national patent application filing fees paid on or after October 1, 1982, must be paid in the amounts set forth in this section. Any additional fees which become due under §1.16 in pending applications on or after October 1, 1982, or which have not been paid prior to October 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to October 1, 1982. For example, if an application filed prior to October 1, 1982, is amended on or after October 1, 1982, to include a multiple dependent claim for the first time, the fee set forth in §1.16(d) must be paid.

The surcharge in §1.16(e) of Alternative B is being established at this time, but will only be made effective when the statutory authority for the late filing of the fee or the oath or declaration becomes effective under 35 U.S.C. 111, as it would be amended by H.R. 6260. The statutory authority for the late filing of the fee or the oath or declaration becomes effective six months after enactment of H.R. 6260 as a Public Law.

§1.17 Patent application processing fees.

Any patent application processing fees paid on or after October 1, 1982, must be paid in the amounts set forth in this section.

The extension fees which must accompany a petition for an extension of time become effective on October 1, 1982, and apply to any application for which the period for responding, i.e., taking action, expires on October 1, 1982, or thereafter. If a response or action by the applicant was due before October 1, 1982, and was not filed timely or an extension of time until October 1, 1982, or thereafter, was not obtained, then §1.136(a) cannot be used to obtain an extension. Any response or action required before October 1, 1982, cannot have its time extended by using §1.136(a). If one or more previous extensions have been granted prior to October 1, 1982, extending the time for taking action until October 1, 1982, or thereafter, the fees which are due for additional extensions under §1.136(a) will be as set forth in §1.17(a)-(d) under either Alternative A or B. For example, under Alternative A, if a first one-month extension has

been granted prior to October 1, 1982 extending the time for taking action to October 15, 1982, a date on or after October 1, 1982, response within one month after the October 15 date to which the time for taking action has been extended would require a second month extension fee of $100. The $50 fee for the extension of the first month to October 15, 1982, would not be required since it had been granted before October 1, 1982. Response within two months after the October 15 date to which the time for taking action has been extended would require a $300 fee. Similarly, response within three months after the October 15 date to which the time for taking action has been extended would require a $500 fee. However, in no case may an applicant respond later than the maximum time period set by statute.

Other examples of the fees to be charged under Alternative A are contained in the following table:

Number of Extension(s) Prior to October 1, 1982	Total Fee For Response After Date to Which Time for Taking Action Has Been Extended As Of October 1, 1982		
	Within 1st Month	Within 2nd Month	Within 3rd Month
ONE	$100	$300	$500
TWO	$200	$400	*
THREE	$200	*	*

*If extensions for four months have previously been granted, no additional extensions are possible under §1.136(a) but may be available under §1.136(b) in certain limited situations.

The previous practice of extending the shortened statutory period an additional month upon the filing of a timely first response to a final rejection is being discontinued effective with any first response to a final rejection filed on or after October 1, 1982. Applicants can obtain additional time for response after that date by paying the appropriate fee for the same. An object of the previous practice, as expressed in §714.13 of the Manual of Patent Examining Procedure, was to obviate the necessity for appeal or filing a continuing application merely to gain time to consider the examiner's position in reply to a response timely filed after final rejection. Under §1.136(a) the object of the previous practice can be achieved without continuing the previous practice. Thus, under §1.136(a) an applicant can file a timely first response to a final rejection within the initial period without having to file an appeal or a continuing application if the examiner's response is not received prior to the expiration of the initial period for response. If the timely first response places the application in condition for allowance no additional response and no extension fee from applicant is required. If the examiner's advisory action indicates the timely first response did not place the application in condition for allowance the applicant may then consider the examiner's position to determine whether further prosecution is desirable. If further prosecution is not desired the application can be abandoned without further

response or expense. If further prosecution is desired, the applicant can petition and pay the necessary fee to extend the time to the extent appropriate up to the maximum permitted by statute. The availability of this flexibility under §1.136(a) eliminates the necessity for the previous practice. Further, under H.R. 6260 extensions of time would be granted in most instances by virtue of the payment of fees rather than without fees as in the previous practice. The elimination of the previous practice after final rejection is thus consistent with the letter and spirit of H.R. 6260.

After an applicant has petitioned and paid the extension fees of $550 for response within the fourth month pursuant to §1.136(a), any further extensions which are permitted under the statute must be obtained under §1.136(b).

A petition for extension of time under §1.136(a) may incorporate by reference a previously filed response without including an additional copy of the response in circumstances where the response was received late and the petition is filed to extend the time so that the response will be considered timely.

The appeal fees set forth in §1.17(e)-(g) are due for notices of appeal or briefs filed, or requests for oral hearings filed, on or after October 1, 1982. If more than one appeal occurs in an application, the fees are due for each notice of appeal, each brief, and each request filed for an oral hearing as long as a decision on the merits by the Board of Appeals resulted from the first notice of appeal, brief, and request for an oral hearing. If the examiner reopens prosecution in the application after appeal and prior to the decision by the Board of Appeals then the fee for the notice of appeal, brief, and request for an oral hearing will apply to a later appeal which does result in a decision by the Board of Appeals. No refund of any appeal fees is permitted since such are due on filing or on requesting an oral hearing. No fee is required for a reply brief.

The fees for petitions set forth in §1.17(h)-(j) and (l) apply to any such petition filed on or after October 1, 1982. The fee set forth in §1.17(m) of Alternative B would apply, with enactment of H.R. 6260 prior to October 1, 1982, to petitions (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent. Section 1.137(b) of Alternative B would apply to applications unintentionally abandoned by failure to prosecute, e.g., failure to respond to an Office action. Sections 1.155(c) and 1.316(c) of Alternative B would apply to applications in which the payment of the fee for issuing a patent is unintentionally delayed. These sections would be implemented, with enactment of H.R. 6260 prior to October 1, 1982, by making them effective as to any applications which would be covered by the literal language of the sections. In addition, and for a transition period between October 1, 1982, and December 31, 1982, a petition to revive an unintentionally abandoned application would be granted if (i) the application received a decision on a petition to revive the application on or after October 1, 1981, and before July 30, 1982, or (ii) a petition was filed or renewed on or after October 1, 1981, and before July 30, 1982, provided in the case of both

(i) and (ii) that a petition to revive was filed within one year of the date of abandonment. The dates in question were chosen so as to permit this remedial provision to be given as wide an application as possible to benefit applicants whose applications have previously been unintentionally abandoned, but who could not meet the previous requirements for a showing that the delay resulting in the abandonment was unavoidable. The dates were also chosen to prevent an applicant whose application has been abandoned for an unduly long period from attempting to take advantage of this new provision, possibly to the detriment of individuals or companies who had begun to make, use, or sell the subject matter of the application after the date of abandonment of the application. By using these dates the possibility of reviving the application of an applicant who has, in effect, abandoned the invention under 35 U.S.C. 102(c) is minimized. Implementing these sections in the manner set forth would be appropriate and proper in view of the legislative history of H.R. 6260, contained in House Report No. 97-542 (Committee on the Judiciary), which indicates that the Commissioner can establish time limits within which petitions to revive or to accept late payment of issue fees can be filed. Thus, it is entirely proper to limit such petitions in the manner set forth in order to prevent abuses from occurring. To ensure that abuses do not occur, §§1.137(b), 1.155(c), 1.316(c), and 1.317(c) specifically indicate that waivers of the time periods involved will not be considered via petitions under §1.183.

The fee set forth in §1.17(k) is required for any application filed on or after October 1, 1982, with a specification in a non-English language.

§1.18 Patent issue fees.

Any patent issue fee paid on or after October 1, 1982, must be paid in the amounts set forth in this section even if the notice of allowance was mailed prior to October 1, 1982, and indicates different amounts due. If the issue fee is paid prior to October 1, 1982, any balance of issue fee due must be paid in accordance with §1.317.

§1.19 Document supply fees.

The document supply fees set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after October 1, 1982.

§1.20 Post-issuance fees.

The post-issuance fees set forth in §1.20(a)-(d) apply to any petitions, requests, or actions filed on or after October 1, 1982. The amounts of the maintenance fees are included in §1.20.

Maintenance fees will be required for any patent actually applied for on or after December 12, 1980, whether or not the patent is entitled to the benefit of an earlier filing date under 35 U.S.C. 120 or a right of priority under 35 U.S.C. 119. For reissue patents, the controlling date would be the filing date of the original patent. For example, maintenance fees would only be

required where the application for the original patent was filed on or after December 12, 1980. As to patents resulting from international applications filed under the Patent Cooperation Treaty, maintenance fees will be required on all patents resulting from international applications having PCT filing dates on or after December 12, 1980.

The details implementing payment of the maintenance fees are not being established at this time since such fees will not be due for some time and additional consideration of the problems thereof is required.

§1.21 Miscellaneous fees and charges.

The miscellaneous fees and charges set forth in this section will apply to all orders and requests received by the Patent and Trademark Office on or after October 1, 1982.

§1.445 International application filing and processing fees.

Any international application filing and processing fees paid on or after October 1, 1982, must be paid in the amounts set forth in this section.

Implementation Of Certain Sections Deferred For Further Comments

In view of the comments and the recommendations received at the hearing on July 9, 1982, the period for written comments on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, has been extended until August 13, 1982 (see 47 FR 32458, July 27, 1982). Comments received at the hearing on July 9, 1982, expressed the view that there is no necessity to publish final rules on §1.9(c), (d), (e), and (f), and on §§1.27 and 1.28, by August 2, 1982, and that further time for consideration and comment was necessary. Persons commenting stated a belief that the pressure of time does not apply to §§1.27 and 1.28 as it does apply to the fee rulemaking. Accordingly, the period for written comments on these sections is extended until August 13, 1982. After receiving written comments by August 13, 1982, the changes to §1.9 and proposed §§1.27 and 1.28 will be adopted as final rules with such modifications as are found to be appropriate after review of the comments. These rule changes, with any appropriate modifications thereof, must become effective on October 1, 1982, with enactment of H.R. 6260 prior to October 1, 1982. Accordingly, adoption of the changes to §1.9 and new §§1.27 and 1.28 is being deferred at this time to permit additional written comments by August 13, 1982. However, these rule changes will be adopted, with any appropriate modifications, as soon as possible after receipt of the additional written comments. No additional proposal will be published and no additional hearing will be held prior to adoption of final rules on the changes to §1.9 and on new §§1.27 and 1.28.

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 3 was also extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change. Since it is not essential

that this deletion be published by August 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 3 as proposed.

SECTION II - REVISION OF TRADEMARK FEES

Background

A notice of proposed rulemaking was published in the Federal Register on June 28, 1982, at 47 FR 28063-28065 and in the Official Gazette on June 29, 1982, at 1019 TMOG 110-119. An oral hearing was held on July 9, 1982. Three written letters and statements were submitted. Three persons testified at the oral hearing. Full consideration has been given to all of the letters, statements, and testimony.

Objectives of Rule Changes

These amendments establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks.

Public Law 96-517

Public Law 96-517 authorizes the Commissioner to establish fees for the filing and processing of an application for the registration of a trademark or other mark, and for providing all other services and materials relating to trademarks and other marks. Public Law 96-517 requires that by October 1, 1982, fees for the filing and processing of an application for the registration of a trademark or other mark be set to recover in the aggregate 50 percent of the estimated average cost to the Office of such processing. Also by October 1, 1982, fees for providing all other services and materials relating to trademarks and other marks are to be set to recover the estimated average cost to the Office of performing the service or furnishing the material.

H.R. 6260

On June 8, 1982, the House of Representatives passed H.R. 6260. This bill would amend the fee provisions to be implemented on October 1, 1982. H.R. 6260 would repeal the provisions in Public Law 96-517 requiring that filing and processing fees be set to recover in the aggregate 50 percent of the estimated average cost of such processing to the Office, and that fees for providing all other services and materials relating to trademarks and other marks be set to recover the estimated average cost to the Office of performing the service or furnishing the material. In passing H.R. 6260, the House of Representatives recommended a fee schedule to the Commissioner for fiscal year 1983. The fees set in Alternative B adopt the House recommendation.

This rule change, therefore, is also designed in the alternative to implement the fee provisions as they would be amended by H.R.

6260. The rule change contains changes which are common to Public Law 96-517 and H.R. 6260, as well as alternative rule changes which are specific to Public Law 96-517 (Alternative A) and to H.R. 6260 (Alternative B).

DISCUSSION OF SIGNIFICANT CHANGES

This rulemaking places into the appropriate sections of Title 37, Code of Federal Regulations, the various fees which are due on filing, during the pendency of a trademark application, or during the life of a registration.

Rule changes for implementing provisions of Public Law 96-517 or H.R. 6260 other than the fee provisions have not been included. Rule changes for implementing provisions other than the fee provisions will be published in a later rulemaking proposal.

DISCUSSION OF SPECIFIC SECTIONS CHANGED

The sections changed are grouped in this document under three different categories. Those changes which are common to Public Law 96-517 and H.R. 6260 appear first and are numbered 72-76. The change which relates only to Public Law 96-517 appears as Alternative A and is numbered 77. The change which is dependent upon enactment of H.R. 6260 appears as Alternative B and is numbered 78. The changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law. The changes contained in Alternative A will become effective on October 1, 1982, if H.R. 6260 does not become a Public Law prior to that date. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, Alternative B will become effective on October 1, 1982, in which case Alternative A will not become effective.

The specific rules for which changes are made are §§2.6, 2.85, 2.101, 2.146, 2.162 and 2.167.

Rule Changes Common to Public Law 96-517 and H.R. 6260

Section 2.85, paragraph (e), is amended to delete reference to late filed fees for oppositions and affidavits. The manner in which such fees shall be handled is described in the pertinent sections for affidavits and oppositions.

Section 2.101, paragraph (c), is amended to delete the reference to a service charge which will no longer be charged for late-filed fees for oppositions.

Section 2.146, paragraph (b), is amended to add a fee for filing a petition to the Commissioner. Paragraph (f) of this section which indicates that no fee is required is deleted.

Section 2.162, paragraph (d), is amended to remove the reference to a service charge for late-filed fees on §8 affidavits.

Section 2.167, paragraph (g), is added to establish procedures relating to the fee for affidavits under §15, 15 U.S.C. 1065, and

to state the Office's action when no fee or an insufficient fee is filed.

Alternative A - Rule Change Only Under Public Law 96-517

Section 2.6 is revised to establish the fees authorized by Public Law 96-517 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks.

Alternative B - Rule Change Only Under H.R. 6260

Section 2.6 is revised to establish the fees recommended by the House of Representatives under H.R. 6260 for filing and processing applications for the registration of trademarks or other marks and for providing services and materials relating to trademarks or other marks. The $10 fee recommended by the House for certified copies appears in paragraphs (n) and (o) as a fee of $6.50 for a copy of a registered mark showing title and/or status and a fee of $3.50 for certification.

RESPONSE TO COMMENTS ON THE RULES

Specific comments were received on several of the sections. All of the comments included in the written submissions and the oral testimony were considered in adopting the changes set forth herein.

Written comments were received from three individuals. Oral comments were presented at the hearing on behalf of a patent and trademark law group, the American Patent Law Association, and an organization of trademark owners and lawyers, the United States Trademark Association. One individual spoke on behalf of a law firm and expanded upon the points raised in his previously submitted written comments.

These comments appear below along with responses thereto, where appropriate.

Comment: The representative of the trademark association spoke favorably about the proposal presented. The organization opposed 100% recovery of trademark costs from user fees. It was felt that such an approach reflected a misconception that trademarks benefit only their owners and not consumers and the economy as a whole. The speaker solicited the assistance of the Patent and Trademark Office in altering this viewpoint.

Comment: The representative of the bar group questioned the fairness of the Office in establishing the fees under Alternative B. It appeared that the Office had accepted the USTA proposals only where they were higher. In all cases where the USTA recommendations were lower than those proposed, the difference was split. The filing fee was singled out as the most unfair fee.

Reply: In Alternative B, the rules adopt the fee levels recommended by the House Committee on the Judiciary in House Report No. 97-542. The Report recognizes that the Office needs to recover a certain amount of fee income over the next three

years. The application filing fee is expected to furnish more than 60% of the estimated annual income. It could not be reduced further without endangering operations. The reduction from $200.00 to $175.00 per class was covered to a large extent by higher fees for other services.

Comment: The philosophy of H.R. 6260 is to recover no more than 100%. Final fees should recover this level and no more.

Reply: Projecting processing costs three years in advance can never be absolutely accurate. The Office must have sufficient funds to process anticipated workloads under the fees set during fiscal years 1983-1985 when costs are expected to be somewhat higher than present costs.

Comment: One suggestion involved retaining Part 4 of 37 CFR, at least for the present. Occasional users of the registration system find it to be a readily available reference. Certain information in the forms is available from no other source. The speaker believed the time pressures to implement the fee changes precluded proper consideration of the merits of Part 4.

Reply: The period for comment on deletion of Part 4 has been extended to August 13, 1982 to allow for additional public comment and internal consideration.

Comment: The suggestion was made that references to affidavits and oppositions should be eliminated from §2.85(e) as the handling of late filed fees for these items is already covered directly in §§2.101(c), 2.162(d) and 2.167(g).

Reply: This suggestion was implemented.

Comment: A suggestion was made that §§2.101(c), 2.162(d) and 2.167(g) dealing with oppositions and affidavits under Section 8 and Section 15 be amended to require payment of all late filed fees within the time period specified in the notification by the Office.

Reply: All of the sections state that the affidavit or opposition "will not be refused if the required fee(s)...are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office." This language is considered sufficient to require payment of all fees or have the opposition, affidavit or declaration refused.

Comment: One suggestion was made to either cite §2.6 in all sections being changed relative to fees or to cite it in none.

Reply: Citations of §2.6 have been added to §2.101(c) and §2.146(b) to conform to §2.162(d) and §2.167(g).

Comment: It was suggested that the fee for a combined section 8 and 15 affidavit needed to be specified in the rules.

Reply: Section 2.6 has been changed to provide this combined fee.

DISCUSSION OF SIGNIFICANT DIFFERENCES BETWEEN PROPOSED AND FINAL RULES

A number of changes which were made as a result of the comments received and further review of the proposed rulemaking are identified below.

Deletion of Part 4 has been deferred for further comments by August 13, 1982 (see 47 FR 32458, July 27, 1982). As elimination of Part 4 is not essential to the setting of fees, and does not have to be in place 60 days before implementation, it was decided to ask for further public comment.

Section 2.85(e) has been revised to eliminate the references to oppositions and affidavits. Because the handling of late filed fees for these items is specified elsewhere, these references in §2.85(e) were redundant and confusing.

Both alternatives of §2.6 have been revised to add a fee for a combined affidavit under sections 8 and 15 of the Act. In order to prevent possible confusion by users of the Trademark system, it was included separately.

IMPLEMENTATION OF TRADEMARK FEE REVISION

The effective date of the trademark fee revisions contained in this rulemaking is October 1, 1982. The changes which will become effective on October 1, 1982, under Public Law 96-517 (without enactment of H.R. 6260) are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under only Public Law 96-517, which appear in Alternative A. The changes which will become effective on October 1, 1982, upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, are (1) the rule changes common to Public Law 96-517 and H.R. 6260, and (2) the rule changes under H.R. 6260, which appear in Alternative B. The rule changes common to Public Law 96-517 and H.R. 6260 will become effective on October 1, 1982, whether or not H.R. 6260 is enacted as a Public Law prior to October 1, 1982. The rule changes in Alternative A will become effective on October 1, 1982, unless H.R. 6260 is enacted as a Public Law prior to October 1, 1982. If Alternative A becomes effective on October 1, 1982, the rule changes in Alternative B will not become effective on October 1, 1982. Upon enactment of H.R. 6260 as a Public Law prior to October 1, 1982, the rule changes in Alternative B will become effective on October 1, 1982, in which case the rule changes in Alternative A will not become effective on October 1, 1982.

Any fee which is due and payable on or after October 1, 1982, must be paid in the amount and in accordance with the procedures contained in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing under §1.8 will be considered to be the date of receipt in the Office. In order to ensure clarity in the implementation a discussion of the implementation of Section 2.6 is set forth below:

IMPLEMENTATION OF SECTION 2.6

Fees set forth in Section 2.6 must be paid in the amounts set forth in this section on or after October 1, 1982. Any additional fees which become due under §2.6 in pending applications on or after October 1, 1982, or which have not been paid prior to October 1, 1982, must be paid in the amounts set forth in this section even though the application was filed prior to October 1, 1982. For example, if an application filed prior to October 1, 1982, is amended on or after October 1, 1982, to include additional classes, the fee set forth in §2.6(a) must be paid per class added.

IMPLEMENTATION OF CERTAIN SECTIONS DEFERRED FOR FURTHER COMMENTS

As a result of additional comments presented during the hearing on the proposed trademark fees, the period for written comments on the deletion of Part 4 has also been extended until August 13, 1982, to provide an additional opportunity for interested persons to comment on this proposed change (see 47 FR 32458, July 27, 1982). Since it is not essential that this deletion be published by August 2, 1982, it is appropriate to extend the period for comments. No additional proposal will be published and no additional hearing will be held prior to a decision on whether or not to delete Part 4 as proposed.

OTHER CONSIDERATIONS RELATING TO PATENT AND TRADEMARK FEE REVISIONS

Environmental, energy, and other considerations: The rule change will not have a significant impact on the quality of the human environment or the conservation of energy resources.

This rule change is in conformity with the requirements of the Regulatory Flexibility Act (Public Law 96-354), Executive Order 12291, and the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et. seq.).

The rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act. Pub. L. 96-354) for several reasons. Public Law 96-517 and H.R. 6260 have both taken into consideration the impact they may have on small entities. The fees under Public Law 96-517 are set to recover 50% of patent and trademark processing costs rather than full costs and generally the rate of increase in the fees is less than that of inflation since the last increase in fees in 1965. Further, the rules implementing Public Law 96-517 take into consideration small entities by setting a lower patent filing fee than issue fee to recover the required level of patent processing costs. The lower filing fee permits a small entity to file a patent application for a relatively low cost and not have to pay the higher balance of fees required to achieve Public Law 96-517 recovery levels until examination is complete and it is known that a patent will issue. Under H.R. 6260 and this rulemaking, small entities would be able to pay reduced fees for filing patent applications and for the issuance and maintenance in force of patents. In general, the rule change will also expedite proceedings before the Patent and Trademark Office, changing existing procedures where they can be simplified.

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et. seq., since no significant additional record keeping or reporting requirements are placed upon the public. In fact, some paperwork, especially that related to requests for extensions of time, will be reduced.

List of Subjects in 37 CFR Parts 1 and 2

Administrative practice and procedure, Courts, Inventions and patents, Lawyers, Nonprofit organizations, Small businesses, Trademarks.

AMENDMENT OF REGULATIONS

For the reasons indicated above and pursuant to the authority given to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, and under Sections 31 and 41 of the Trademark Act of July 5, 1946, 15 U.S.C. §§1113, and 1123, Parts 1 and 2 of Title 37, Code of Federal Regulations, are amended as set forth below.

PART 1 - RULES OF PRACTICE IN PATENT CASES

The table of contents for Part 1 is amended as follows:

FEES AND PAYMENT OF MONEY

1.16 National application filing fees.
1.17 Patent application processing fees.
1.18 Patent issue fees.
1.19 Document supply fees.
1.20 Post-issuance fees.
1.21 Miscellaneous fees and charges.

* * * * *

TIME FOR RESPONSE BY APPLICANT; ABANDONMENT OF APPLICATION

1.134 Time period for response to an Office action.

* * * * *

INTERFERENCES: TERMINATION

* * * * *

1.268 Filing of interference settlement agreements.

SECTION I - REVISION OF PATENT FEES

RULE CHANGES COMMON TO PUBLIC LAW 96-517 AND H.R. 6260

1. Section 1.11 is amended by revising paragraph (c) to read as follows:

§1.11 Files open to the public.

* * * * *

(c) All requests for reexamination for which the fee under §1.20(c) has been paid, will be announced in the Official Gazette. Any reexaminations at the initiative of the Commissioner pursuant to §1.520 will also be announced in the Official Gazette. The announcement shall include at least the date of the request, if any, the reexamination request control number or the Commissioner initiated order control number, patent number, title, class and subclass, name of the inventor, name of the patent owner of record, and the examining group to which the reexamination is assigned.

* * * * *

2. Section 1.12 is revised to read as follows:

1.12 Assignment records open to public inspection.

(a) The assignment records, relating to original or reissue patents, including digests and indexes, and assignment records relating to pending or abandoned trademark applications and to trademark registrations, are open to public inspection and copies of any instrument recorded may be obtained upon request and payment of the fee set forth in §1.19(a)(5).

(b) Assignment records, digests, and indexes, relating to any pending or abandoned patent application are not available to the public. Copies of any such assignment records and information with respect thereto shall be obtainable only upon written authority of the applicant or applicant's assignee or attorney or agent or upon a showing that the person seeking such information is a bona fide prospective or actual purchaser, mortgagee, or licensee of such application, unless it shall be necessary to the proper conduct of business before the Office or as provided by these rules.

(c) Any request by a member of the public seeking copies of any assignment records of any pending or abandoned patent application preserved in secrecy under §1.14, or any information with respect thereto, must (1) be in the form of a petition accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public to the particular assignment records from the applicant or applicant's assignee or attorney or agent of record.

(d) An order for a copy of an assignment should give the identification of the record. If identified only by the name of the patentee and number of the patent, or in the case of a trademark registration by the name of the registrant and number

of the registration, or by name of the applicant and serial number or international application number of the application, an extra charge as set forth in §1.21(f) will be made for the time consumed in making a search for such assignment.

3. Section 1.14 is amended by adding a new paragraph (e) to read as follows:

§1.14 Patent applications preserved in secrecy.

* * * * *

(e) Any request by a member of the public seeking access to, or copies of, any pending or abandoned application preserved in secrecy pursuant to paragraphs (a) and (b) of this section, or of any papers relating thereto, must (1) be in the form of a petition and be accompanied by the petition fee set forth in §1.17(i) or (2) include written authority granting access to the member of the public in that particular application from the applicant or the applicant's assignee or attorney or agent of record.

4. A new §1.19 is added which reads as follows:

§1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents

(1) Printed copy of a patent, including a design patent, or defensive publication document, except color plant patent---------- $ 1.00

(2) Printed copy of a plant patent in color---------- $ 8.00

(3) Copy of patent application as filed, each 50 pages or fraction thereof---------- $18.00

(4) Copy of patent file wrapper and contents, each 100 pages or fraction thereof---------- $30.00

(5) Copy of Office records, except as provided in paragraphs (a)(1) through (4) of this section, per page---------- $ 0.30

(6) Microfiche copy of microfiche, per microfiche---------- $ 2.00

(b) Certified copies of Office documents

(1) For certifying Office records, per certificate---------- $ 3.50

(2) For a search of assignment records,

abstract of title and certification, per patent---------- $12.00

(3) For comparing copies not prepared by the Office with the original, prior to certification of the copies, per page---------- $ 0.10

(c) Subscription services

(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and one subclass---------- $ 4.00

(2) For annual subscription to each additional subclass in addition to the one covered by the fee under paragraph (c)(1) of this section, per subclass---------- $ 0.40

(d) Library service (35 U.S.C. 13)

For providing to libraries copies of all patents issued annually, per annum---------- $ 50.00

(e) Lists of patents in subclass

(1) For list of all United States patents in a subclass, per 100 patent numbers or fraction thereof---------- $ 2.00

(2) For list of United States patents in a subclass limited by date or patent number, per 50 patent numbers or fraction thereof--------- $ 2.00.

5. Section 1.21 is revised to read as follows:

§1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents

(1) For admission to examination for registration to practice, fee payable upon application---------- $75.00

(2) On registration to practice---------- $50.00

(3) For reinstatement to practice---------- $25.00

(4) For certificate of good standing as an attorney or agent---------- $10.00

(b) Deposit accounts

(1) For establishing or reinstating a deposit account---------- $10.00

(2) Service charge for each month when the balance at the end of the month is below $40---------- $ 2.00

(c) Disclosure document

For filing a disclosure document---------- $10.00

(d) Delivery box

Local delivery box rental, per annum---------- $24.00

(e) International-type search reports

For preparing an international-type search report of an international-type search made at the time of the first action on the merits in a national patent application---------- $25.00

(f) Search of Office records

For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof---------- $10.00

(g) Copy machine tokens

Token for copying machine, each---------- $ 0.20

(h) Recording of documents

(1) For recording each assignment, agreement or other paper relating to the property in a patent or application---------- $20.00

(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application--------- $ 5.00

(i) Publication in Official Gazette

For publication in the Official Gazette of a notice of the availability of an application or a patent for licensing or sale, each application or patent---------- $ 6.00

(j) For a duplicate or replacement of a permanent Office user pass (There is no charge for the first permanent user pass).-------- $ 5.00

(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this section, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

6. Section 1.24 is revised to read as follows:

§1.24 Coupons.

Coupons in denominations of forty cents and one dollar are sold by the Patent and Trademark Office for the convenience of regular purchasers of U.S. patents and trademark registrations; these coupons may not be used for any other purpose. The 40-cent coupons are sold individually and in books of 50 with stubs for record for $20. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50. These coupons are good until used; they may be transferred but cannot be redeemed.

7. Section 1.25 is revised to read as follows:

§1.25 Deposit accounts.

(a) For the convenience of attorneys, agents, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§1.21(b)(1)). A minimum deposit of $50 or more, depending on the activity of the individual account, is required. At the close of each month's business, a statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit value. An amount sufficient to cover all services, copies, etc., requested must always be on deposit. A service charge (§1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $40.

(b) Filing, issue, appeal, international-type search report, international application processing, petition, and post-issuance fees may be charged against these accounts. A general authorization to charge all fees, or only certain fees, set forth in §§1.16 to 1.18 to a deposit account may be filed in an individual application, either for the entire pendency of the application or with respect to a particular paper filed. An authorization to charge to a deposit account the fee for a request for reexamination pursuant to §1.510 and any other fees required in a reexamination proceeding in a patent may also be filed with the request for reexamination.

8. Section 1.26 is revised to read as follows:

§1.26 Refunds.

(a) Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw an application, an appeal, or a request for oral hearing, will not entitle a party to demand such a return. Amounts of one dollar or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over one dollar may be

returned by check or, if requested, by credit to a deposit account.

(b) (Reserved)

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

9. Section 1.45 is amended by revising paragraphs (b) and (c) to read as follows:

§1.45 Joint inventors.

* * * * *

(b) If an application for patent has been made through error and without any deceptive intention by two or more persons as joint inventors when they were not in fact joint inventors, the application may be amended to remove the names of those not inventors upon filing of a petition including a statement of the facts verified by all of the original applicants, the required fee (§1.17(h)), and an oath or declaration as required by §1.65 by the applicant who is the actual inventor, provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

(c) If an application for patent has been made through error and without any deceptive intention by less than all the actual joint inventors, the application may be amended to include all the joint inventors upon filing of a petition including a statement of the facts verified by, and an oath or declaration as required by §1.65 executed by all the actual joint inventors, along with the required fee (§1.17(h)), provided the amendment is diligently made. Such amendment must have the written consent of any assignee.

10. Section 1.47 is revised to read as follows:

§1.47 Filing when an inventor refuses to sign or cannot be reached.

(a) If a joint inventor refuses to join in an application for patent or cannot be found or reached after diligent effort, the application may be made by the other inventor on behalf of himself or herself and the omitted inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and by the required fee (§1.17(h)) and must state the last known address of the omitted inventor. The Patent and Trademark Office shall forward notice of the filing of the application to the omitted inventor at said address. Should such notice be returned to the Office undelivered, or should the address of the omitted inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The omitted inventor may subsequently join in the application on filing an oath or

declaration of the character required by §1.65. A patent may be granted to the inventor making the application, upon a showing satisfactory to the Commissioner, subject to the same rights which the omitted inventor would have had if he or she had been joined.

(b) Whenever an inventor refuses to execute an application for patent, or cannot be found or reached after diligent effort, a person to whom the inventor has assigned or agreed in writing to assign the invention or who otherwise shows sufficient proprietary interest in the matter justifying such action may make application for patent on behalf of and as agent for the inventor. The oath or declaration in such an application must be accompanied by a petition including proof of the pertinent facts and a showing that such action is necessary to preserve the rights of the parties or to prevent irreparable damage, and by the required fee (§1.17(h)) and must state the last known address of the inventor. The assignment, written agreement to assign or other evidence of proprietary interest, or a verified copy thereof, must be filed in the Patent and Trademark Office. The Office shall forward notice of the filing of the application to the inventor at the address stated in the application. Should such notice be returned to the Office undelivered, or should the address of the inventor be unknown, notice of the filing of the application shall be published in the Official Gazette. The inventor may subsequently join in the application on filing an oath or declaration of the character required by §1.65. A patent may be granted to the inventor upon a showing satisfactory to the Commissioner.

11. Section 1.51 is amended by revising paragraph (a)(4) and by adding a new paragraph (c) to read as follows:

§1.51 General requisites of an application.

(a) * * *

(4) The prescribed filing fee, see §1.16.

* * * * *

(c) Applicants may desire and are permitted to file with, or in, the application an authorization to charge, at any time during the pendency of the application, any fees required under any of §§1.16 to 1.18 to a deposit account established and maintained in accordance with §1.25.

12. Section 1.52 is amended by revising paragraph (a) and by adding a new paragraph (d) to read as follows:

§1.52 Language, paper, writing, margins.

(a) The application, any amendments or corrections thereto, and the oath or declaration must be in the English language except as provided for in §1.69 and paragraph (d) of this section, or be accompanied by a verified translation of the application and a translation of any corrections or amendments into the English language. All papers which are to become a part of the permanent

records of the Patent and Trademark Office must be legibly written, typed, or printed in permanent ink or its equivalent in quality. All of the application papers must be presented in a form having sufficient clarity and contrast between the paper and the writing, typing, or printing thereon to permit the direct reproduction of readily legible copies in any number by use of photographic, electrostatic, photo-offset, and microfilming processes. If the papers are not of the required quality, substitute typewritten or printed papers of suitable quality may be required.

* * * * *

(d) An application including a signed oath or declaration may be filed in a language other than English if it is accompanied by the fee set forth in §1.17(k). A verified English translation of the non-English language application is required to be filed with the application or within such time as may be set by the Office.

13. Section 1.55 is amended by revising paragraph (b) to read as follows:

§1.55 Serial number and filing date of application.

* * * * *

(b) An applicant may claim the benefit of the filing date of a prior foreign application under the conditions specified in 35 U.S.C. 119. The claim to priority need be in no special form and may be made by the attorney or agent if the foreign application is referred to in the oath or declaration as required by §1.65. The claim for priority and the certified copy of the foreign application specified in the second paragraph of 35 U.S.C. 119 must be filed in the case of interference (§1.224); when necessary to overcome the date of a reference relied upon by the examiner; or when specifically required by the examiner; and in all other cases they must be filed not later than the date the issue fee is paid. If the papers filed are not in the English language, a translation need not be filed except in the three particular instances specified in the preceding sentence, in which event a sworn translation or a translation certified as accurate by a sworn or official translator must be filed. If the priority papers are submitted after the date the issue fee is paid, they must be accompanied by a petition requesting their entry and the fee set forth in §1.17(i).

* * * * *

14. Section 1.75 is amended by revising paragraph (c) to read as follows:

§1.75 Claim(s).

* * * * *

(c) One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application. Any dependent claim which refers to more

than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only. A multiple dependent claim shall not serve as a basis for any other multiple dependent claim. For fee calculation purposes under §1.16, a multiple dependent claim will be considered to be that number of claims to which direct reference is made therein. For fee calculation purposes, also, any claim depending from a multiple dependent claim will be considered to be that number of claims to which direct reference is made in that multiple dependent claim. In addition to the other filing fees, any original application which is filed with, or is amended to include, multiple dependent claims must have paid therein the fee set forth in §1.16(d). Claims in dependent form shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim. A multiple dependent claim shall be construed to incorporate by reference all the limitations of each of the particular claims in relation to which it is being considered.

* * * * *

15. Section 1.85 is revised to read as follows:

§1.85 Informal drawings.

The requirements of §1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required.

§1.86 [Removed]

16. Section 1.86 is removed.

17. Section 1.102 is amended by revising paragraph (a) and adding new paragraphs (c) and (d) to read as follows:

§1.102 Advancement of examination.

(a) Applications will not be advanced out of turn for examination or for further action except as provided by this part, or upon order of the Commissioner to expedite the business of the Office, or upon filing of a request under paragraph (b) of this section or upon filing a petition under paragraphs (c) or (d) of this section with a verified showing which, in the opinion of the Commissioner, will justify so advancing it.

* * * * *

(c) A petition to make an application special may be filed without a fee if the basis for the petition is the applicant's age or health or that the invention will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources.

(d) A petition to make an application special on grounds other than those referred to in paragraph (c) of this section must be accompanied by the petition fee set forth in §1.17(i).

18. Section 1.103 is amended by revising paragraphs (a) and (b) to read as follows:

§1.103 Suspension of action.

(a) Suspension of action by the Office will be granted for good and sufficient cause and for a reasonable time specified upon petition by the applicant and, if such cause is not the fault of the Office, the payment of the fee set forth in §1.17(i). Action will not be suspended when a response by the applicant to an Office action is required.

(b) If action by the Office on an application is suspended when not requested by the applicant, the applicant shall be notified of the reasons therefor.

* * * * *

19. Section 1.104 is amended by revising paragraph (d) to read as follows:

§1.104 Nature of examination; examiner's action.

* * * * *

(d) Any national application may also have an international-type search report prepared thereon at the time of the national examination on the merits, upon specific written request therefor and payment of the international-type search report fee. See §1.21(e) for amount of fee for preparation of international-type search report.

* * * * *

20. Section 1.134 is added and reads as follows:

§1.134 Time period for response to an Office action.

An Office action will notify the applicant of any non-statutory or shortened statutory time period set for response to an Office action. Unless the applicant is notified in writing that response is required in less than six months, a maximum period of six months is allowed.

21. Section 1.135 is amended by revising paragraphs (a), (b) and (c) to read as follows:

§1.135 Abandonment for failure to respond within time period.

(a) If an applicant of a patent application fails to respond within the time period provided under §§1.134 and 1.136, the application will become abandoned unless an Office action indicates otherwise.

(b) Prosecution of an application to save it from abandonment pursuant to paragraph (a) of this section must include such complete and proper action as the condition of the case may require. The admission of an amendment not responsive to the

last Office action, or refusal to admit the same, and any proceedings relative thereto, shall not operate to save the application from abandonment.

(c) When action by the applicant is a bona fide attempt to respond and to advance the case to final action, and is substantially a complete response to the Office action, but consideration of some matter or compliance with some requirement has been inadvertently omitted, opportunity to explain and supply the omission may be given before the question of abandonment is considered.

* * * * *

22. Section 1.136 is revised to read as follows:

§1.136 Filing of timely responses with petition and fee for extension of time and extensions of time for cause.

(a) If an applicant is required to respond within a non-statutory or shortened statutory time period, applicant may respond up to four months after the time period set if a petition for an extension of time and the fee set in §1.17 are filed prior to or with the response, unless (1) applicant is notified otherwise in an Office action or (2) the application is involved in an interference declared pursuant to §1.207. The date on which the response, the petition, and the fee have been filed is the date of the response and also the date for purposes of determining the period of extension and the corresponding amount of the fee. The expiration of the time period is determined by the amount of the fee paid. In no case may an applicant respond later than the maximum time period set by statute, or be granted an extension of time under paragraph (b) of this section when the provisions of this paragraph are available.

(b) When a response with petition and fee for extension of time cannot be filed pursuant to paragraph (a) of this section, the time for response will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension. In no case can any extension carry the date on which response to an Office action is due beyond the maximum time period set by statute or be granted when the provisions of paragraph (a) of this section are available. See §1.245 for extension of time in interference proceedings.

23. Section 1.165 is amended by revising paragraph (b) to read as follows:

§1.165 Drawings.

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water

color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See §1.84.

24. Section 1.171 is revised to read as follows:

§1.171 Application for reissue.

An application for reissue must contain the same parts required for an application for an original patent, complying with all the rules relating thereto except as otherwise provided, and in addition, must comply with the requirements of the rules relating to reissue applications. The application must be accompanied by a certified copy of an abstract of title or an order for a title report accompanied by the fee set forth in §1.19(b)(2), to be placed in the file, and by an offer to surrender the original patent (§1.178).

25. Section 1.177 is revised to read as follows:

§1.177 Reissue in divisions.

The Commissioner may, in his or her discretion, cause several patents to be issued for distinct and separate parts of the thing patented, upon demand of the applicant, and upon payment of the required fee for each division. Each division of a reissue constitutes the subject of a separate specification descriptive of the part or parts of the invention claimed in such division; and the drawing may represent only such part or parts, subject to the provisions of §§1.83 and 1.84. On filing divisional reissue applications, they shall be referred to the Commissioner. Unless otherwise ordered by the Commissioner upon petition and payment of the fee set forth in §1.17(i), all the divisions of a reissue will issue simultaneously; if there be any controversy as to one division, the others will be withheld from issue until the controversy is ended, unless the Commissioner shall otherwise order.

26. Section 1.181 is amended by revising paragraphs (d) and (g) to read as follows:

§1.181 Petition to the Commissioner.

* * * * *

(d) Where a fee is required for a petition to the Commissioner the appropriate section of this part will so indicate. If any required fee does not accompany the petition, the petition will be dismissed.

* * * * *

(g) The Commissioner may delegate to appropriate Patent and Trademark Office officials the determination of petitions.

27. Section 1.182 is revised to read as follows:

§1.182 Questions not specifically provided for.

All cases not specifically provided for in the regulations of this part will be decided in accordance with the merits of each case by or under the authority of the Commissioner, and such decision will be communicated to the interested parties in writing. Any petition seeking a decision under this section must be accompanied by the petition fee set forth in §1.17(h).

28. Section 1.183 is revised to read as follows:

§1.183 Suspension of rules.

In an extraordinary situation, when justice requires, any requirement of the regulations in this part which is not a requirement of the statutes may be suspended or waived by the Commissioner or the Commissioner's designee, sua sponte, or on petition of the interested party, subject to such other requirements as may be imposed. Any petition under this section must be accompanied by the petition fee set forth in §1.17(h).

29. Section 1.191 is amended by revising paragraph (a) to read as follows:

§1.191 Appeal to Board of Appeals.

(a) Every applicant for a patent or for reissue of a patent, or every owner of a patent under reexamination, any of the claims of which have been twice rejected, or who has been given a final rejection (§1.113), may, upon the payment of the fee set forth in §1.17(e), appeal from the decision of the examiner to the Board of Appeals within the time allowed for response.

* * * * *

30. Section 1.192 is amended by revising paragraph (a) to read as follows:

§1.192 Appellant's brief.

(a) The appellant shall, within 2 months from the date of the notice of appeal under §1.191 in an application, reissue application, or patent under reexamination, or within the time allowed for response to the action appealed from, if such time is later, file a brief in triplicate. The brief must be accompanied by the requisite fee set forth in §1.17(f) and must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. The brief must include a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

31. Section 1.194 is amended by revising paragraphs (b) and (c) to read as follows:

§1.194 Oral hearing.

* * * * *

(b) If appellant desires an oral hearing, appellant must file a written request for such hearing accompanied by the fee set forth in §1.17(g) within one month after the date of the examiner's answer. If appellant requests an oral hearing and submits therewith the fee set forth in §1.17(g), an oral argument may be presented by, or on behalf of, the primary examiner if considered desirable by either the primary examiner or the Board.

(c) If no request and fee for oral hearing have been timely filed by the appellant, the appeal will be assigned for consideration and decision. If the appellant has requested an oral hearing and has submitted the fee set forth in §1.17(g), a day of hearing will be set, and due notice thereof given to the appellant and to the primary examiner. Hearing will be held as stated in the notice, and oral argument will be limited to twenty minutes for the appellant and fifteen minutes for the primary examiner unless otherwise ordered before the hearing begins.

32. Section 1.197 is amended by revising paragraph (b) to read as follows:

§1.197 Action following decision.

* * * * *

(b) A single request for rehearing or reconsideration, or modification of the decision, may be made if filed within thirty days from the date of the original decision, unless that decision is so modified as to become, in effect, a new decision, and the Board of Appeals so states. Such time may be extended under the provisions of §1.136.

* * * * *

33. Section 1.231 is amended by revising paragraph (a)(1) to read as follows:

§1.231 Motions before the primary examiner.

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered. A motion to dissolve an interference in which a patentee is a party on the ground that the claims corresponding to the counts are unpatentable to the patentee over patents or printed publications will be considered through reexamination if it complies with the requirements of §1.510(b) and is accompanied by the fee for requesting reexamination set in §1.20(c). Otherwise, a motion to dissolve an interference in which a patentee is a party will not

be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority. Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§1.203(a) and 1.205(a).

* * *

* * * * *

34. Section 1.245 is revised to read as follows:

§1.245 Extension of time.

Extensions of time in any interference proceeding not otherwise provided for may be had by stipulation of the parties, subject to approval, or on motion duly brought, sufficient cause being shown for such extension. The provisions of §1.136 do not apply to time periods in interferences.

35. Section 1.246 is revised to read as follows:

§1.246 Late papers.

A motion or other paper belatedly filed will not normally be considered except upon a showing, under oath or in the form of a declaration (§1.68), of sufficient cause as to why such motion or paper was not timely presented. The provisions of §1.136 do not apply to time periods in interferences.

36. Section 1.263 is revised to read as follows:

§1.263 Statutory disclaimer by patentee.

The disclaimer referred to in §1.262, when made by a patentee in interference is not a disclaimer under 35 U.S.C. 253. If a disclaimer under the statute and the fee set forth in §1.20(d) (see §1.321) cancelling claims involved in the interference from the patent, is made by the patentee, including all assignees as shown by the records of the Patent and Trademark Office, the interference will be dissolved pro forma as to such claims.

37. Section 1.268 is added to read as follows:

§1.268 Filing of interference settlement agreements.

(a) Any agreement or understanding between parties to an interference, including any collateral agreements referred to therein, made in connection with or in contemplation of the termination of the interference, must be in writing and a true copy thereof filed in the Patent and Trademark Office, directed to the Board of Patent Interferences, before the termination of

the interference as between the said parties to the agreement or understanding.

(b) If any party filing the agreement or understanding pursuant to paragraph (a) of this section so requests, the copy will be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person upon petition accompanied by the fee set forth in §1.17(i) and on a showing of good cause.

(c) Failure to file the copy of the agreement or understanding pursuant to paragraph (a) of this section, will render permanently unenforceable such agreement or understanding and any patent of the parties involved in the interference or any patent subsequently issued on any application of the parties so involved. The Commissioner may, however, upon petition accompanied by the fee set forth in §1.17(h) and on a showing of good cause for failure to file within the time prescribed, permit the filing of the agreement or understanding during the six-month period subsequent to the termination of the interference as between the parties to the agreement or understanding.

38. Section 1.292 is amended by revising paragraph (a) to read as follows:

§1.292 Public use proceedings.

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations and the fee set forth in §1.17(j) is filed by one having information of the pendency of an application and is found, on reference to the primary examiner, to make a prima facie showing that the invention involved in an interference or claimed in an application believed to be on file had been in public use or on sale one year before the filing of the application, or before the date alleged by an interfering party in his or her preliminary statement or the date of invention established by such party, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, times may be set for taking testimony, which shall be taken as provided by §§1.271 to 1.286. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

* * * * *

39. Section 1.304 is amended by revising paragraph (a) to read as follows:

§1.304 Time for appeal or civil action.

(a) The time for filing the notice and reasons of appeal to the U.S. Court of Appeals for the Federal Circuit (§1.302) or for commencing a civil action (§1.303) is sixty days from the date of the decision of the Board of Appeals or the Board of Patent Interferences. If a request for rehearing or reconsideration, or modification of the decision, is filed within the time provided pursuant to §1.197(b) or §1.256(b), the time for filing an appeal

or commencing a civil action shall expire at the end of the sixty-day period or thirty days after action on the request, whichever is later. The time periods set forth herein are subject to the provisions of §1.136.

* * * * *

40. Section 1.311 is revised to read as follows:

§1.311 Notice of allowance.

(a) If, on examination, it shall appear that the applicant is entitled to a patent under the law, a notice of allowance will be sent to applicant at the correspondence address indicated in §1.33, calling for the payment of a specified sum constituting the issue fee (§1.18), which shall be paid within 3 months from the date of the mailing of the notice of allowance.

(b) An authorization to charge the issue fee (§1.18) to a deposit account may be filed in an individual application, either before or after mailing of the notice of allowance. Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of the notice of allowance, the issue fee will be automatically charged to the deposit account at the time of mailing the notice of allowance.

41. Section 1.312 is revised to read as follows:

§1.312 Amendments after allowance.

(a) No amendment may be made as a matter of right in an application after the mailing of the notice of allowance. Any amendment pursuant to this paragraph filed before the payment of the issue fee may be entered on the recommendation of the primary examiner, approved by the Commissioner, without withdrawing the case from issue.

(b) Any amendment pursuant to paragraph (a) of this section filed after the date the issue fee is paid must be accompanied by a petition including the fee set forth in §1.17(i) and a showing of good and sufficient reasons why the amendment is necessary and was not earlier presented.

42. Section 1.313 is revised to read as follows:

§1.313 Withdrawal from issue.

(a) Applications may be withdrawn from issue for further action at the initiative of the Office or upon petition by the applicant. Any such petition by the applicant must include a showing of good and sufficient reasons why withdrawal of the application is necessary and, if the reason for the withdrawal is not the fault of the Office, must be accompanied by the fee set forth in §1.17(i). If the application is withdrawn from issue, a new notice of allowance will be sent if the application is again allowed. Any amendment accompanying a petition to withdraw an application from issue must comply with the requirements of §1.312.

(b) When the issue fee has been paid, and the patent to be issued has received its issue date and patent number, the application will not be withdrawn from issue for any reason except (1) mistake on the part of the Office, (2) a violation of §1.56 or illegality in the application, (3) unpatentability of one or more claims, or (4) for interference.

43. Section 1.314 is revised to read as follows:

§1.314 Issuance of patent.

If payment of the issue fee is timely made, the patent will issue in regular course unless (a) the application is withdrawn from issue (§1.313) or (b) issuance of the patent is deferred. Any petition by the applicant requesting deferral of the issuance of a patent must be accompanied by the fee set forth in §1.17(i) and must include a showing of good and sufficient reasons why it is necessary to defer issuance of the patent.

44. Section 1.321 is revised to read as follows:

§1.321 Statutory disclaimer.

(a) A disclaimer under 35 U.S.C. 253 must be accompanied by the fee set forth in §1.20(d) and identify the patent and the claim or claims which are disclaimed, and be signed by the person making the disclaimer, who shall state therein the extent of his or her interest in the patent. A disclaimer which is not a disclaimer of a complete claim or claims may be refused recordation. A notice of the disclaimer is published in the Official Gazette and attached to the printed copies of the specification. In like manner any patentee or applicant may disclaim or dedicate to the public the entire term, or any terminal part of the term, of the patent granted or to be granted.

(b) A terminal disclaimer, when filed in an application to obviate a double patenting rejection, must be accompanied by the fee set forth in §1.20(d) and include a provision that any patent granted on that application shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection.

45. Section 1.324 is revised to read as follows:

§1.324 Correction of inventorship in patent.

Whenever a patent is issued and it appears that there was a misjoinder or nonjoinder of inventors and that such misjoinder or omission occurred by error and without deceptive intention, the Commissioner may, on petition of all the parties and the assignees and satisfactory proof of the facts and payment of the fee set forth in §1.20(b), or on order of a court before which such matter is called in question, issue a certificate deleting the misjoined inventor from the patent or adding the non-joined inventor to the patent.

46. Section 1.331 is amended by revising paragraph (a) to read as follows:

§1.331 Recording of assignments.

(a) Assignments, including grants and conveyances, of patents, national applications, or international applications which designate the United States of America, will be recorded in the Patent and Trademark Office under 35 U.S.C. 261. Other instruments affecting title to a patent, a national application, or an international application which designates the United States of America, and licenses, even though the recording thereof may not serve as constructive notice under 35 U.S.C. 261, will be recorded as provided in this section or at the discretion of the Commissioner. Any instrument to be recorded, except those under Part 7 of this title, must be accompanied by the fee set forth in §1.21(h).

* * * * *

47. Section 1.332 is revised to read as follows:

§1.332 Receipt and recording.

Assignments are recorded in regular order as promptly as possible, and then transmitted with the date and identification of the record stamped thereon to the persons entitled to them. The date of the record is the date of the receipt of the assignment at the Office in proper form and accompanied by the fee set forth in §1.21(h).

48. Section 1.334 is revised to read as follows:

§1.334 Issue of patent to assignee.

(a) In case of an assignment of the entire interest in the invention and application, or of the entire interest in the patent to be granted, the patent will normally issue to the assignee. If the assignee should hold an undivided part interest, the patent will normally issue jointly to the inventor and the assignee. If it is desired that the patent so issue, the assignment in either case must first have been recorded, and at a day not later than the date payment is made of the issue fee.

(b) At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent and Trademark Office. In the event an assignment has been filed, such statement must include the name and address of the assignee and indicate whether or not an acknowledgement of a recorded assignment has been received from the Patent and Trademark Office.

(c) If the assignment is recorded after the date of payment of the issue fee, the assignee may petition that the patent issue to the assignee as recorded. Any such petition must be accompanied by the fee set forth in §1.17(i).

49. Section 1.341 is amended by revising paragraph (h) to read as follows:

§1.341 Registration of attorneys and agents.

* * * * *

(h) Oath and registration fee. Before his or her name may be entered on the register of attorneys or on the register of agents, every applicant for registration must, after his or her application is approved, subscribe and swear to an oath or make a declaration prescribed by the Commissioner of Patents and Trademarks and pay the prescribed registration fee. (See §1.21(a)(2).)

* * * * *

50. Section 1.347 is revised to read as follows:

§1.347 Removing names from registers.

Attorneys and agents, registered to practice before the Patent and Trademark Office, should notify the Office of any change of address for entry on the register, by letter separate from any notice of change of address filed in individual applications. The Office may address a letter to any person on the registers, at the address of which separate notice for the register was last received, for the purpose of ascertaining whether such person desires to remain on the register. The name of any person failing to reply and give the information requested within a time limit specified will be removed from the register, and the names so removed published in the Official Gazette. Any name so removed may be reinstated, either on the register of attorneys or the register of agents, as may be appropriate. Any request for reinstatement must be accompanied by the fee set forth in §1.21(a)(3).

51. Section 1.445 is amended by revising paragraphs (a)(1) through (4) to read as follows:

§1.445 International application filing and processing fees.

(a) * * *

(1) A transmittal fee (see 35 U.S.C. 361(d) and PCT Rule 14) - $125.00.

(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:

(i) No corresponding prior United States national application with fee has been filed---------- $500.00

(ii) Corresponding prior United States national application with fee has been filed---------- $250.00.

(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2) - $125.00 per additional invention.

(4) The national fee, that is, the amount set forth as the filing fee under §1.16(a) through (d) credited by an amount of $250 where an international search fee has been paid on the corresponding international application to the United States as an International Searching Authority. Where the amount of the credit is in excess of that required for the national fee, a request for a refund of the excess under §1.446(b) may be filed at the time of paying the national fee. Only one such credit is permitted based on a single international search fee.

* * * * *

52. Section 1.446 is amended by revising paragraph (b) to read as follows:

§1.446 Refund of international application filing and processing fees.

* * * * *

(b) Refund of a portion of the search fee may be made to the extent set forth in §1.445(a)(4) if requested at the time of paying the national fee.

* * * * *

53. Section 1.451 is amended by revising paragraph (b) to read as follows:

§1.451 The priority claim and priority document in an international application.

* * * * *

(b) Whenever the priority of an earlier United States national application is claimed in an international application, the applicant may request in a letter of transmittal accompanying the international application upon filing with the United States Receiving Office, that the Patent and Trademark Office prepare a certified copy of the national application for transmittal to the International Bureau (PCT Art. 8 and PCT Rule 17). The fee for preparing a certified copy is stated in §1.19(a)(4) and (b)(1).

* * * * *

54. Section 1.510 is amended by revising paragraph (a) to read as follows:

§1.510 Request for reexamination.

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under

§1.501. The request must be accompanied by the fee for requesting reexamination set in §1.20(c).

* * * * *

ALTERNATIVE A - RULE CHANGES UNDER ONLY PUBLIC LAW 96-517

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

55. A new §1.16 is added which reads as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases---------- $150.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3---------- $ 15.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.)---------- $ 5.00

(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application------- $ 50.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) (Reserved)

(f) For filing each design application----------$ 63.00

(g) Basic fee for filing each plant application-------- $100.00

(h) Basic fee for filing each reissue application------ $150.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent---------- $ 15.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes.)---------- $ 5.00

(Note, see §1.445 for international application filing and processing fees.).

56. A new §1.17 is added which reads as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a)---------- $ 50.00

(b) Extension fee for response within second month pursuant to §1.136(a)---------- $150.00

(c) Extension fee for response within third month pursuant to §1.136(a)---------- $350.00

(d) Extension fee for response within fourth month pursuant to §1.136(a)---------- $550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals---------- $ 58.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal---------- $ 58.00

(g) For filing a request for an oral hearing before the Board of Appeals---------- $ 50.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$120.00

--§1.45 - for correction of inventorship
--§1.47 - for filing by other than all the inventors or a person not the inventor
--§1.182 - for decision on questions not specifically provided for
--§1.183 - to suspend the rules
--§1.268 - for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$ 60.00

--§1.12 - for access to an assignment record
--§1.14 - for access to an application
--§1.55 - for entry of late priority papers

--§1.102 - to make application special
--§1.103 - to suspend action in application
--§1.177 - for divisional reissues to issue separately
--§1.268 - for access to interference settlement agreement
--§1.312 - for amendment after payment of issue fee
--§1.313 - to withdraw an application from issue
--§1.314 - to defer issuance of a patent
--§1.334 - for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under §1.292----------$750.00

(k) For processing an application filed with a specification in a non-English language (§1.52(d))----------$ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151----------$120.00.

57. A new §1.18 is added which reads as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent----------$250.00

(b) Issue fee for issuing a design patent for a 3½, 7 or 14 year term----------$ 88.00

(c) Issue fee for issuing a plant patent----------$125.00.

58. A new §1.20 is added which reads as follows:

§1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323)----------$ 40.00

(b) Petition for correction of inventorship in patent (§1.324)----------$ 120.00

(c) For filing a request for reexamination (§1.510(a))----------$1,500.00

(d) For filing each statutory disclaimer (§1.321)----------$ 50.00

(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant-------- $ 200.00

(f) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980, in force beyond 8 years; the fee is due by seven years and six months after the original grant---------- $ 400.00

(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant---------- $ 600.00.

59. Section 1.137 is revised to read as follows:

§1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in §1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) (Reserved)

(c) Any petition filed pursuant to paragraph (a) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment. Any such petition not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

60. Section 1.155 is revised to read as follows:

§1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that

the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) (Reserved)

(d) Any petition filed pursuant to paragraph (b) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment. Any such petition not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

61. Section 1.316 is revised to read as follows:

§1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) (Reserved)

(d) Any petition filed pursuant to paragraph (b) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment. Any such petition not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

62. Section 1.317 is revised to read as follows:

§1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever

occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) (Reserved)

(d) Any petition filed pursuant to paragraph (b) of this section must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse. Any such petition not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

ALTERNATIVE B - RULE CHANGES UNDER H.R. 6260.

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

63. A new §1.16 is added which reads as follows:

§1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:

By a small entity (§1.9(f))---------- $150.00
By other than a small entity---------- $300.00

(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:

By a small entity (§1.9(f))---------- $ 15.00
By other than a small entity---------- $ 30.00

(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 (Note that §1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes.):

By a small entity (§1.9(f))---------- $ 5.00
By other than a small entity---------- $ 10.00

(d) In addition to the basic filing fee in an original application, if the application

contains, or is amended to contain, a multiple dependent claim(s), per application:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims cancelled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)

(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(f) For filing each design application:

By a small entity (§1.9(f))---------- $ 62.50
By other than a small entity---------- $125.00

(g) Basic fee for filing each plant application:

By a small entity (§1.9(f))---------- $100.00
By other than a small entity---------- $200.00

(h) Basic fee for filing each reissue application:

By a small entity (§1.9(f))---------- $150.00
By other than a small entity---------- $300.00

(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:

By a small entity (§1.9(f))---------- $ 15.00
By other than a small entity---------- $ 30.00

(j) In addition to the basic filing fee in a reissue application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent, (Note that §1.75(c) indicates how multiple dependent claims are considered for fee purposes.):

By a small entity (§1.9(f))---------- $ 5.00
By other than a small entity---------- $ 10.00

(Note, see §1.445 for international application filing and processing fees.).

64. A new §1.17 is added which reads as follows:

§1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $ 25.00
By other than a small entity---------- $ 50.00

(b) Extension fee for response within second month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $ 75.00
By other than a small entity---------- $150.00

(c) Extension fee for response within third month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $175.00
By other than a small entity---------- $350.00

(d) Extension fee for response within fourth month pursuant to §1.136(a):

By a small entity (§1.9(f))---------- $275.00
By other than a small entity---------- $550.00

(e) For filing a notice of appeal from the examiner to the Board of Appeals:

By a small entity (§1.9(f))---------- $ 57.50
By other than a small entity---------- $115.00

(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:

By a small entity (§1.9(f))---------- $ 57.50
By other than a small entity---------- $115.00

(g) For filing a request for an oral hearing before the Board of Appeals:

By a small entity (§1.9(f))---------- $ 50.00
By other than a small entity---------- $100.00

(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$120.00

--§1.45 - for correction of inventorship
--§1.47 - for filing by other than all the inventors or a person not the inventor
--§1.182 - for decision on questions not specifically provided for
--§1.183 - to suspend the rules

--§1.268 - for late filing of interference settlement agreement

(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph----------$ 60.00

--§1.12 - for access to an assignment record
--§1.14 - for access to an application
--§1.55 - for entry of late priority papers
--§1.102 - to make application special
--§1.103 - to suspend action in application
--§1.177 - for divisional reissues to issue separately
--§1.268 - for access to interference settlement agreement
--§1.312 - for amendment after payment of issue fee
--§1.313 - to withdraw an application from issue
--§1.314 - to defer issuance of a patent
--§1.334 - for patent to issue to assignee, assignment recorded late

(j) For filing a petition to institute a public use proceeding under §1.292----------$750.00

(k) For processing an application filed with a specification in a non-English language (§1.52(d))----------$ 20.00

(l) For filing a petition (1) for the revival of an abandoned application under 35 U.S.C. 133, or (2) for delayed payment of the issue fee under 35 U.S.C. 151:

By a small entity (§1.9(f))----------$ 25.00
By other than a small entity----------$ 50.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:

By a small entity (§1.9(f))----------$250.00
By other than a small entity----------$500.00.

65. A new §1.18 is added which reads as follows:

§1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:

By a small entity (§1.9(f))---------- $250.00
By other than a small entity---------- $500.00.

(b) Issue fee for issuing a design patent:

By a small entity (§1.9(f))---------- $ 87.50
By other than a small entity---------- $175.00.

(c) Issue fee for issuing a plant patent:

By a small entity (§1.9(f))	$125.00
By other than a small entity	$250.00.

66. A new §1.20 is added which reads as follows:

§1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§1.323)	$ 40.00
(b) Petition for correction of inventorship in patent (§1.324)	$ 120.00
(c) For filing a request for reexamination (§1.510(a))	$1,500.00
(d) For filing each statutory disclaimer (§1.321):	
By a small entity (§1.9(f))	$ 25.00
By other than a small entity	$ 50.00
(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before (date of enactment), in force beyond 4 years; the fee is due by three years and six months after the original grant	$ 200.00
(f) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before (date of enactment), in force beyond 8 years; the fee is due by seven years and six months after the original grant	$ 400.00
(g) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after December 12, 1980 and before (date of enactment), in force beyond 12 years; the fee is due by eleven years and six months after the original grant	$ 600.00
(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after (date of enactment), in force beyond 4 years; the fee is due by three years and six months after the original grant:	
By a small entity (§1.9(f))	$ 200.00
By other than a small entity	$ 400.00

(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after (date of enactment), in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§1.9(f))	$ 400.00
By other than a small entity	$ 800.00

(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after (date of enactment), in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§1.9(f))	$ 600.00
By other than a small entity	$1200.00.

67. Section 1.66 is revised to read as follows:

§1.66 Officers authorized to administer oaths.

(a) The oath or affirmation may be made before any person within the United States authorized by law to administer oaths . An oath made in a foreign country may be made before any diplomatic or consular officer of the United States authorized to administer oaths, or before any officer having an official seal and authorized to administer oaths in the foreign country in which the applicant may be, whose authority shall be proved by a certificate of a diplomatic or consular officer of the United States, or by an apostille of an official designated by a foreign country which, by treaty or convention, accords like effect to apostilles of designated officials in the United States. The oath shall be attested in all cases in this and other countries, by the proper official seal of the officer before whom the oath or affirmation is made. Such oath or affirmation shall be valid as to execution if it complies with the laws of the State or country where made. When the person before whom the oath or affirmation is made in this country is not provided with a seal, his official character shall be established by competent evidence, as by a certificate from a clerk of a court of record or other proper officer having a seal.

(b) When the oath is taken before an officer in a country foreign to the United States, any accompanying application papers, except the drawings, must be attached together with the oath and a ribbon passed one or more times through all the sheets of the application, except the drawings, and the ends of said ribbon brought together under the seal before the latter is affixed and impressed, or each sheet must be impressed with the official seal of the officer before whom the oath is taken. If the papers as filed are not properly ribboned or each sheet impressed with the seal, the case will be accepted for examination, but before it is allowed, duplicate papers, prepared in compliance with the foregoing sentence, must be filed.

68. Section 1.137 is revised to read as follows:

§1.137 Revival of abandoned application.

(a) An application abandoned for failure to prosecute may be revived as a pending application if it is shown to the satisfaction of the Commissioner that the delay was unavoidable. A petition to revive an abandoned application must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by a showing of the causes of the delay, by the proposed response unless it has been previously filed, and by the petition fee set forth in §1.17(l). Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(b) An application unintentionally abandoned for failure to prosecute may be revived as a pending application if the delay was unintentional. A petition to revive an unintentionally abandoned application must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition to revive under paragraph (a) of this section which was filed within one year of the date of abandonment of the application. A petition to revive an unintentionally abandoned application must be accompanied by (1) a statement that the abandonment was unintentional, (2) a proposed response unless it has been previously filed, and (3) a petition fee as set forth in §1.17(m). Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three month period set forth in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(c) Any petition pursuant to paragraph (a) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

69. Section 1.155 is revised to read as follows:

§1.155 Issue and term of design patents.

(a) If, on examination, it shall appear that the applicant is entitled to a design patent under the law, a notice of allowance will be sent to the applicant, or applicant's attorney or agent, calling for the payment of the issue fee (§1.18(b)). If this issue fee is not paid within 3 months of the date of the notice of allowance, the application shall be regarded as abandoned.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

70. Section 1.316 is revised to read as follows:

§1.316 Application abandoned for failure to pay issue fee.

(a) If the issue fee is not paid within 3 months from the date of the notice of allowance, the application will be regarded as abandoned. Such an abandoned application will not be considered as pending before the Patent and Trademark Office.

(b) The Commissioner may accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed

after the applicant is notified of, or otherwise becomes aware of, the abandonment, and must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the issue fee later than three months after the mailing of the notice of allowance as though no abandonment had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the application became abandoned or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of abandonment of the application. The petition to accept the delayed payment must be accompanied by (1) the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the abandonment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting revival of an unintentionally abandoned application will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of abandonment must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of abandonment of the application.

71. Section 1.317 is revised to read as follows:

§1.317 Lapsed patents; delayed payment of balance of issue fee.

(a) If the issue fee was paid prior to October 1, 1982, any remaining balance of the issue fee is to be paid within three months from the date of notice thereof and, if not paid, the patent will lapse at the termination of the three month period.

(b) The Commissioner may accept the payment of the remaining balance of the issue fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if upon petition the delay in payment is shown to have been unavoidable. The petition to accept the delayed payment must be promptly filed after the applicant is notified of, or otherwise becomes aware of, the lapse, and must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for delayed payment (§1.17(l)), and (3) a showing that the delay was unavoidable. Such showing

must be a verified showing if made by a person not registered to practice before the Patent and Trademark Office.

(c) The Commissioner may, upon petition, accept the payment of the remaining balance of the fee later than three months after the mailing of the notice thereof as though no lapse had ever occurred if the delay in payment was unintentional. The petition to accept the delayed payment must be filed within one year of the date on which the patent lapsed or be filed within three months of the date of the first decision on a petition under paragraph (b) of this section which was filed within one year of the date of lapse of the patent. The petition to accept the delayed payment must be accompanied by (1) the remaining balance of the issue fee, unless it has been previously submitted, (2) the fee for unintentionally delayed payment (§1.17(m)), and (3) a statement that the delay was unintentional. Such statement must be a verified statement if made by a person not registered to practice before the Patent and Trademark Office. The Commissioner may require additional information where there is a question whether the delay in payment was unintentional. The three-month period from the date of the first decision referred to in this paragraph may be extended under the provisions of §1.136(a), but no further extensions under §1.136(b) will be granted. Petitions to the Commissioner under §1.183 to waive any time periods for requesting acceptance of an unintentionally delayed payment will not be considered, but will be returned to the applicant.

(d) Any petition pursuant to paragraph (b) of this section not filed within six months of the date of lapse must be accompanied by a terminal disclaimer with fee under §1.321 dedicating to the public a terminal part of the term of the patent equivalent to the period of lapse of the patent.

(35 U.S.C. 6 and 25)

PART 2 - RULES OF PRACTICE IN TRADEMARK CASES

SECTION II - REVISION OF TRADEMARK FEES

RULE CHANGES COMMON TO PUBLIC LAW 96-517 and H.R. 6260

72. Section 2.85 is amended by revising paragraph (e) to read as follows:

§2.85 Classification schedules.

* * * * *

(e) Where the amount of the fee received on filing an appeal in connection with an application or on an application for renewal or in connection with a petition for cancellation is sufficient for at least one class of goods or services but is less than the required amount because multiple classes in an application or registration are involved, the appeal or renewal application or petition for cancellation will not be refused on the ground that the amount of the fee was insufficient if the required additional amount of the fee is received in the Patent and Trademark Office

within the time limit set forth in the notification of this defect by the Office, or if action is sought only for the number of classes equal to the number of fees submitted.

* * * * *

73. Section 2.101 is amended by revising paragraph (c) to read as follows:

§2.101 Filing an opposition.

* * * * *

(c) If no fee, or a fee insufficient to cover at least one class, is filed within 30 days after publication of the mark to be opposed or within an extension of the time for filing an opposition, the opposition will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office.

* * * * *

74. Section 2.146 is amended by revising paragraph (b) to read as follows, and by removing paragraph (f):

§2.146 Petition to the Commissioner.

* * * * *

(b) Any such petition must contain a statement of the facts involved and the point or points to be reviewed and the action requested and the requisite fee (See §2.6). Any brief in support thereof should accompany or be embodied in the petition; in contested cases any brief in opposition shall be filed within fifteen days after service of the petition. Where facts are to be proved in ex parte cases (as in petition to revive an abandoned application), the proof in the form of affidavits or declarations in accordance with §2.20 (and exhibits, if any) must accompany the petition.

* * * * *

75. Section 2.162 is amended by revising paragraph (d) to read as follows:

§2.162 Requirements for affidavit or declaration during sixth year.

* * * * *

(d) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed before the expiration of the sixth year following the date of registration or of publication under §12(c) of the Act, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office

within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

* * * * *

76. Section 2.167 is amended by adding a paragraph (g) as follows:

§2.167 Affidavit or declaration under Section 15.

* * * * *

(g) Include the required fee for each class to which the affidavit or declaration pertains in the registration. If no fee, or a fee insufficient to cover at least one class, is filed at an appropriate time, the affidavit or declaration will not be refused if the required fee(s) (See §2.6) are filed in the Patent and Trademark Office within the time limit set forth in the notification of this defect by the Office. If insufficient fees are included to cover all classes in the registration, the particular class or classes to which the affidavit or declaration pertains should be specified.

ALTERNATIVE A - RULE CHANGE ONLY UNDER PUBLIC LAW 96-517

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

77. Section 2.6 is revised to read as follows:

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a)	For filing an application, per class	$88.00
(b)	For filing an application for renewal of a registration, per class	150.00
(c)	For filing to publish a mark under §12(c), per class	50.00
(d)	For issuing a new certificate of registration upon request of assignee	50.00
(e)	For a certificate of correction of registrant's error	50.00
(f)	For filing a disclaimer to a registration	50.00

(g) For filing an amendment to a registration---------- 50.00

(h) For filing an affidavit under §8 of the Act, per class---------- 50.00

(i) For filing an affidavit under §15 of the Act, per class---------- 50.00

(j) For filing a combined affidavit under §§8 and 15 of the Act, per class---------- 100.00

(k) For petitions to the Commissioner---------- 50.00

(l) For filing petition to cancel or notice of opposition, per class---------- 100.00

(m) For ex parte appeal to the Trademark Trial and Appeal Board, per class---------- 50.00

(n) For printed copy of registered mark
Copy only---------- .40
Copy showing title and/or status---------- 6.50

(o) For certifying trademark records, per certificate---------- 3.50

(p) For photocopies or other reproductions of records, drawings, or printed material, per page of the material copied---------- .30

(q) For recording trademark assignment, per document---------- 20.00

For each mark in addition to one assigned in the same document---------- 5.00

(r) For abstracts of title to each registration or application, including the search---------- 12.00

(s) For special service handling of late filed fees in connection with a renewal------- 50.00

(t) For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

ALTERNATIVE B - RULE CHANGE ONLY UNDER H.R. 6260

Prior to October 1, 1982, the Department of Commerce will publish a document confirming the amendments under either Alternative A or Alternative B set forth herein depending upon enactment of H.R. 6260 as a Public Law.

78. Section 2.6 is revised to read as follows:

§2.6 Trademark fees.

The following fees and charges are established by the Patent and Trademark Office for trademark cases:

(a)	For filing an application, per class	$175.00
(b)	For filing an application for renewal of a registration, per class	300.00
(c)	For filing to publish a mark under §12(c), per class	100.00
(d)	For issuing a new certificate of registration upon request of assignee	100.00
(e)	For a certificate of correction of registrant's error	100.00
(f)	For filing a disclaimer to a registration	100.00
(g)	For filing an amendment to a registration	100.00
(h)	For filing an affidavit under §8 of the Act, per class	100.00
(i)	For filing an affidavit under §15 of the Act, per class	100.00
(j)	For filing a combined affidavit under §§8 and 15 of the Act, per class	200.00
(k)	For petitions to the Commissioner	100.00
(l)	For filing petition to cancel or notice of opposition, per class	200.00
(m)	For ex parte appeal to the Trademark Trial and Appeal Board, per class	100.00
(n)	For printed copy of registered mark Copy only Copy showing title and/or status	 1.00 6.50
(o)	For certifying trademark records, per certificate	3.50
(p)	For photocopies or other reproductions of records, drawings, or printed material, per page of the material copied	.30
(q)	For recording trademark assignments, per document	100.00
	For each mark in addition to one assigned	

in the same document---------- 20.00

(r) For abstracts of title to each registration or application, including the search-------- 12.00

(s) For special service handling of late filed fees in connection with a renewal----- 100.00

(t) For items and services that the Commissioner finds may be supplied, for which fees are not specified, such charges as may be determined by the Commissioner with respect to each such item or service---------- actual cost.

(Sections 31 and 41 of the Trademark Act of July 5, 1946 (15 U.S.C. §§1113 and 1123); (35 U.S.C. 6 and 25))

July 14, 1982
Date

Gerald J. Mossinghoff
Commissioner of Patents
and Trademarks

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,007

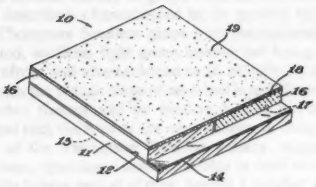
ROOF CONSTRUCTION AND METHOD THEREOF

John S. Best, deceased, late of Midland, Mich., by Dow Chemical Company, assignor to The Dow Chemical Company, Midland, Mich.

Original No. 3,411,256, dated Nov. 19, 1968, Ser. No. 495,847, Oct. 14, 1965. Application for reissue Aug. 2, 1978, Ser. No. 930,439

Int. Cl.³ E04B *1/80, 7/00*

U.S. Cl. 52—408 2 Claims



1. A method of preparing a built up roof consisting essentially of applying and affixing to a roof deck a water impermeable membrane disposing a plurality of closed cell water impermeable thermal insulating members *in coplanar disposition* having fissures therebetween above said water impermeable membrane on the upper side of the membrane and applying a water permeable protective layer [on] *consisting only of loose gravel spread directly over* the thermal insulating layer, *the exposed face and body of said protective layer and the interface of said protective layer with said thermal insulating layer being water permeable.*

Re. 31,008

DAMPENED RAILWAY CAR TRUCK

Franklin D. Barber, Flossmoor, Ill., assignor to Standard Car Truck Company, Chicago, Ill.

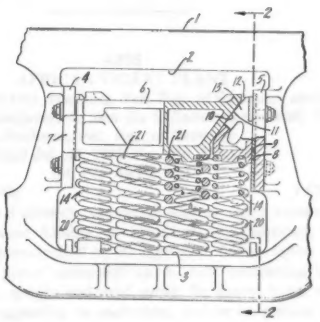
Original No. 3,714,905, dated Feb. 6, 1973, Ser. No. 115,184, Feb. 16, 1971. Application for reissue Jan. 31, 1980, Ser. No. 112,713

Int. Cl.³ B61F *5/06, 5/12, 5/24*

U.S. Cl. 105—197 DB 5 Claims

1. A railway truck assembly including a pair of parallel side frames, a window in each of said side frames, a bolster extending perpendicularly between said side frames and having each of its opposite ends received in one of said windows, each of said windows having widened side walls, said side walls having portions extending *in the same plane and* in opposite directions laterally of their associated side frame, said side walls *and planar extending portions,* paralleling each other and carrying a plurality of wear plates, *with each wear plate having its planar engaging surface parallel with the planar side wall and extending portions,* said wear plates being positioned on opposite sides of the linear center line of their associated side frame, each of said wear plates having a portion positioned inwardly of said extending side wall portions, each of said bolster end portions having a plurality of spaced pockets positioned in its sides, each of said pockets having a wall inclined downwardly away from and opposed to one of said wear plates, an individual wedge element received in each of said pockets, each of said wedge elements engaging the inclined wall of its associated pocket and engaging the wear plate opposed to its associated pocket *the entire engaging surfaces of the respective wear plates and wedge elements being in substantially the same lateral plane,* and yielding means for each of said wedge elements, each said yielding means being positioned in said window and urging its associated wedge element toward its associated pocket.

3. In a railway truck bolster and side frame assembly, a side frame having a window, a bolster having an end portion penetrating said window, said side frame having parallel *and planar* window side wall portions extending *only* laterally in opposite directions from the linear center line of said side frame, a first pair of wedge means engaging one side of said bolster end and one of said side wall portions, a second pair of wedge means engaging the opposite side of said bolster end and the other of said side wall portions, said wedge means of said first pair



being positioned on opposite sides of the linear center line of said frame, said wedge means of said second pair being positioned on opposite sides of said center line of said side frame, each of said wedge means of said first pair being opposite and aligned with a wedge means of said second pair *the entire engaging surfaces of the respective and engaging wedge means and side frame being in substantially the same plane and applying only compressive forces perpendicular to the bolster center line and only frictional shear forces parallel to the bolster center line upon the opposing surfaces of said side frame.*

4. A railway side frame and bolster assembly including a side frame having a window, the vertical side walls of said window including parallel *and planar* portions extending laterally in opposite directions from the longitudinal center line of said side frame and substantially beyond the main body of said side frame, said bolster having an end portion penetrating said window and wedge means engaging the opposite sides of said bolster end portion and said laterally extending side wall portions on opposite sides of the longitudinal center line of said side frame *with the entire engaging surfaces of said wedge means and said laterally and planar extending side wall portions being in substantially the same plane.*

Re. 31,009

Patent Not Issued For This Number

Re. 31,010

PREPARATION OF CARBOXYLIC ACID ESTERS WITH BF_3 COMPLEX CATALYST

Abraham P. Gelbein, Morristown, N.J., assignor to Chem Systems Inc., New York, N.Y.

Original No. 4,262,138, dated Apr. 14, 1981, Ser. No. 28,459, Apr. 9, 1979. Application for reissue Jun. 11, 1981, Ser. No. 272,519

Int. Cl.³ C07C *67/38*

U.S. Cl. 560—233 **8 Claims**

1. A process for the carbonylation of an olefin selected from the group consisting of ethylene and propylene which comprises reacting the olefin with carbon monoxide in the presence of a catalyst complex containing equimolar amounts of BF_3 and alcohol at a temperature of from 0° C. to 100° C., carrying out said reaction with an internal molar ratio of carbon monoxide to olefin of at least 5:1 until about 50% of the alcohol in said catalyst is consumed, thereby forming a carboxylic acid ester and liberating free BF_3; separating sufficient BF_3 from the reaction mass by stripping to leave a first residue containing equimolar amounts of the BF_3, the alcohol and the carboxylic acid ester; admixing the first residue with additional alcohol; thereafter distilling said admixture to separate overhead an azeotrope of said alcohol and said carboxylic acid ester [and additional uncomplexed alcohol] until a second residue containing BF_3 to alcohol in a molar ratio of 1:2 remains; and thereafter combining said second residue with additional BF_3 to form the catalyst complex.

8. The process of claim 1 wherein additional uncomplexed alcohol is distilled from the admixture of the first residue and additional alcohol, after the azeotrope of said alcohol and said carboxylic acid ester is separated overhead.

PLANT PATENTS

GRANTED AUGUST 10, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,873

GRAPE VINE

Allan A. Corrin, 6541 S. Holbrook, Reedley, Calif. 93654

Filed Dec. 12, 1980, Ser. No. 216,062

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—47 **1 Claim**

1. A new and distinct variety of grape vine, substantially as illustrated and described, characterized by its general resemblance to the Thompson Seedless grape vine (unpatented) in bearing elongated, seedless, light green berries, but being distinguished therefrom and characterized as to novelty by having leaves wherein the petiole sinus of each leaf is not closed by the adjacent lobes thereof and by bearing berries having a more blunt apical end; the fruit of the new variety, in comparison with fruit of the Thompson Seedless variety, maturing about 30 days later, retaining a desirable color in cold storage for a substantially longer period of time, having a tougher skin, and being superior in seedless quality, the clusters borne by the new variety being resistant to "shatter" and the berries thereof being of large size without girdling or application of gibberellin or other growth regulator, the shatter-resistance of the bunches and the size of the berries borne by the new variety without girdling or such application being equal to said bunch and berry characteristics of the Thompson Seedless variety with girdling and/or such application.

4,874

GRAPE VINE

Allan A. Corrin, 6541 S. Holbrook, Reedley, Calif. 93654

Filed Dec. 12, 1980, Ser. No. 215,670

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—47 **1 Claim**

1. A new and distinct variety of grape vine, substantially as illustrated and described, characterized by its resemblance to the Black Rose grape vine (unpatented), which it most nearly resembles, in bearing fruit of large size having a dark, approximately black skin, the new variety being characterized as to novelty by having leaves of extremely large size and berries having a heavy bluish-gray bloom and by being distinguished from the Black Rose variety in that the new variety is of more vigorous growth and bears fruit which matures about 30 days later, has superior shipping qualities due to a tougher skin and heavier stem, and being further distinguished from the Black Rose variety by more even ripening of each bunch so that each berry of the new variety has a skin color which is substantially solidly and uniformly dark except for a small annulus about the stem.

4,875

AFRICAN VIOLET PLANT

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "OPTIMARA", Isselburg, Fed. Rep. of Germany

Filed Jul. 25, 1980, Ser. No. 172,124

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet known by the cultivar name Atlanta, as described and illustrated, and particularly characterized by its light pink flower color, medium to dark green variegated leaves, with contrasting light green centers; upright and rigid stems; floriferous habit, with 7–12 flowers appearing on each stem, and by its uniform and compact growth habit.

PATENTS

GRANTED AUG. 10, 1982

ERRATA

For CLASS	See PATENT NO.
441–003	4,343,055
441–084	4,343,056
374–031	4,343,182
374–158	4,343,185
376–293	4,343,681
376–214	4,343,682
524–041	4,343,727
523–456	4,343,728
524–529	4,343,729
524–551	4,343,730
523–427	4,343,731
524–114	4,343,732
524–087	4,343,733
548–412	4,343,741
549–380	4,343,742
429–157	4,343,849
525–449	4,343,957
278–021	4,343,995
378–021	4,343,996

PATENTS

GRANTED AUGUST 10, 1982

GENERAL AND MECHANICAL

4,343,044

STRETCHABLE SPEED SWIM SUIT

William F. Borda, Laureldale; Thomas M. Fry, Greenfields, and Charles A. Rist, Jr., Muhlenberg Park, all of Pa., assignors to Dolfin Corporation, Shillington, Pa.

Continuation-in-part of Ser. No. 1,925, Jan. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 845,338, Oct. 25, 1977, abandoned. This application Aug. 11, 1980, Ser. No. 176,621

Int. Cl.³ A41D *5/00*

U.S. Cl. 2—67 **17 Claims**

1. A speed swim suit fashioned out of hydrophobic, synthetic stretch yarn knit into an open mesh fabric, said fabric having a multitude of openings therein of sufficient size to allow water and air to pass freely therethrough to avoid water retention, water entrapment and resultant billowing of said fabric, while being sufficiently opaque to conceal the underlying body of the wearer, said mesh comprising a plurality of courses and wales formed of loops in length of said yarn, said yarn lengths being disposed in a first group and a second group, each yarn length of said first group forming a loop in each consecutive course, the loops of the first group of yarn lengths being disposed consecutively in at least three alternate courses extending in a first direction and at least three alternate courses extending in a second, opposite, direction, each yarn length of said second group forming a loop in each consecutive course, with the loops of the second group of yarn lengths being disposed consecutively in at least three alternate courses extending in said second direction and at least three alternate courses extending in said first direction.

4,343,045

SHOULDER GARMENT

Gino Ferrari, 83 Colebay Corner, St. Maarteen, Netherlands

Filed Jan. 12, 1981, Ser. No. 224,066

Int. Cl.³ A41D *23/00*

U.S. Cl. 2—92 **3 Claims**

1. A garment comprising a main body section adapted to extend over the upper chest and shoulders of the wearer, a fringe area secured along the entire lower edges of said main body section and depending downwardly therefrom, said fringe area comprising a plurality of threads or cords, a pair of strap members detachably secured to the inner surface of said garment, said pair of strap members extending below the arm pits of the wearer thereof and extending to the back portion of the garment and detachably secured thereto, said strap members maintaining the garment in proper position on the upper chest area and the shoulders of the wearer of the garment.

4,343,046

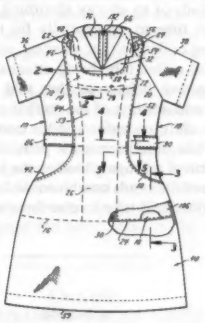
PLURAL-SIZE ARTICLE OF WEARING APPAREL

Diane Zebell, St. Louis, Mo., assignor to Angelica Corporation, St. Louis, Mo.

Filed Jul. 2, 1980, Ser. No. 164,538

Int. Cl.³ A41D *1/22*

U.S. Cl. 2—105 **11 Claims**



1. A plural-size, fitted article of wearing apparel which has a panel of readily-expansible material in the front thereof and which has a portion of less-expansible material overlying said panel of readily-expansible material, said panel of readily-expansible material extending downwardly from the chest area of said article of wearing apparel through the waist area of said article of wearing apparel to a point below said waist area, said panel of readily-expansible material having substantial portions thereof which are movable relative to said portion of less-expansible material and hence are capable of expanding and contracting in said chest and waist areas without corresponding expansion and contraction of said portion of less-expansible material in said chest and waist areas, said portion of less-expansible material substantially concealing said panel of readi-

ly-expansible material and providing a relatively unstressed fitted appearance for said front of said article of wearing apparel while permitting said panel of readily-expansible material to conform to the size and configuration of the wearer of said article of wearing apparel in said chest and waist areas, whereby said article of wearing apparel can be worn by persons having different sizes and configurations in said chest and waist areas of their front portions and yet can have a relatively unstressed fitted appearance.

4,343,047

PROTECTIVE HELMETS

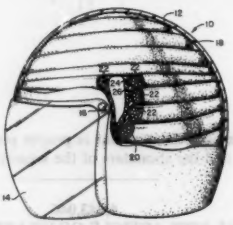
James C. Lazowski, Downsview; Sharron Katz, Toronto, and John A. Winship, Batawa, all of Canada, assignors to Her Majesty the Queen in Right of Canada, Ottawa, Canada

Filed Oct. 21, 1980, Ser. No. 199,322

Claims priority, application Canada, Jun. 3, 1980, 353324

Int. Cl.³ A42B *3/02*

U.S. Cl. 2—411 **10 Claims**



1. Apparatus for providing both sizing and impact energy absorption in a protective helmet, comprising:

(a) a flexible, air permeable mesh tube made of a textile material; and

(b) loose beads of an energy absorbing material stuffed into said mesh tube to substantially fill the same, the stuffed tube being coiled so that adjacent coils abut one another, the stuffed coiled tube being attachable to the interior of the protective helmet so that said loose beads, during donning and nestling of the stuffed coiled tube helmet by a wearer, shift to conform to the contours of the wearer's head, while simultaneously providing a capability for attenuation of an impact load on the helmet by progressive crushing of the beads combined with motion of individual beads within said tube to distribute said impact load.

4,343,048

STENT FOR A CARDIAC VALVE

Donald N. Ross, 25 Upper Wimpole St., London W.1; Endre Bodnar, 9 West End Ct., West End Ave., Pinner, Middlesex, and William J. Hoskin, 5 Long Buftlers, Harpenden, Hertfordshire, all of England

Filed Aug. 4, 1980, Ser. No. 175,083

Claims priority, application United Kingdom, Aug. 6, 1979, 7927293

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **21 Claims**

1. A stent for a cardiac valve, the stent having an axial direction, a metal base ring disposed generally radially about said axial direction, and metal legs, for attachment of commissures or cusps of a valve, projecting from the base ring generally in said axial direction, wherein said legs are flexible such that in use they bend resiliently along substantially the whole of their axial length to take up strain in a valve mounted in the

stent when the valve closes without substantially impairing the performance of the valve.

4,343,049

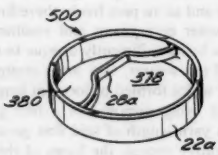
ELECTRO-CHEMICALLY MACHINED RING AND STRUT STRUCTURE FOR PROSTHETIC HEART VALVES

Bruce E. Fettel, Newport Beach; Paul E. Morris, Mission Viejo, and Leo J. Lichte, Riverside, all of Calif., assignors to Shiley, Inc., Gillette, Calif.

Division of Ser. No. 18,566, Mar. 8, 1979, Pat. No. 4,276,132, which is a continuation-in-part of Ser. No. 870,685, Jan. 19, 1978, abandoned. This application Dec. 1, 1980, Ser. No. 211,760

Int. Cl.³ A61F *1/22*

U.S. Cl. 3—1.5 **12 Claims**



7. Support structure for a prosthetic heart valve having a moveable occluder, said support structure comprising:

a ring defining an orifice which is alternately opened and closed by the movement of said occluder; and

strut means for limiting the movement of said occluder with respect to said ring, said strut means projecting a substantial amount into the cylinder of space defined by the interior of said ring extended on either side of said ring, said strut means being formed integrally with said ring from a solid metal blank with at least a portion of said strut means having a non-circular cross-sectional shape which offers lower fluid dynamic flow resistance than a circular cross-sectional shape of equal cross-sectional area, while having substantially the same strength as said circular strut.

4,343,050

INTRAOCULAR LENSES

Charles D. Kelman, 150 E. 58th St., New York, N.Y. 10022

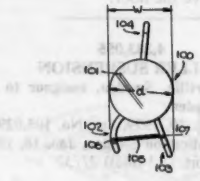
Filed Jul. 14, 1980, Ser. No. 167,923

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 3—13 **23 Claims**

14. An intraocular lens with flexible support suitable for use as an artificial lens in the interior of a human eye and insertable through an incision in said eye, said eye interior having groove portions extending circumferentially at lower and upper portions of the eye when viewed in cross-section, said lens comprising a light-focusing lens body with first and second peripheral sections, and first and second position fixation means respectively joined to said first and second peripheral sections of said lens body and extending generally radially beyond said

peripheral sections, said position fixation means being respectively engageable with the corresponding one of said groove portions, one of said position fixation means comprising first and second support members each having a free end, one of said first and second support members being resiliently deformable in response to a predetermined force applied thereto in a direction toward the other of said support members for reducing the distance between said free ends a predetermined



amount, said deformable support member being capable of spontaneously returning toward substantially its undeformed condition upon removal of said applied force after said lens has been inserted into the eye, said lens further including a force applicator means connected to said first and second support members to establish said predetermined force on said one of said support members, the other of said support members being substantially nondeformable in response to said predetermined force.

4,343,051

DECOMPOSITION CONTAINER, ESPECIALLY A DECOMPOSITION LATRINE

Nils C. Persson, Östersund, Sweden, assignor to Inventor Invest AB, Östersund, Sweden

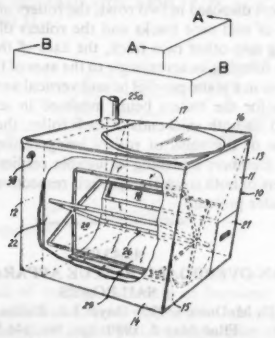
PCT No. PCT/SE79/00225, § 371 Date Jul. 6, 1980, § 102(e) Date Jul. 6, 1980, PCT Pub. No. WO80/00962, PCT Pub. Date May 15, 1980

PCT Filed Nov. 5, 1979, Ser. No. 198,015

Claims priority, application Sweden, Nov. 6, 1978, 7811469; Feb. 1, 1979, 7900891

Int. Cl.³ A47K *11/06*

U.S. Cl. 4—111.1 **6 Claims**



1. In a decomposition chamber for providing decomposition of a mass consisting of decomposable material, comprising a mass receiving chamber and an electric heat source (**28**) associated therewith to raise the temperature of the mass (**27**) in the chamber (**20**) to a value in the region of between 45° and 80° C. for providing a rapid thermophilic decomposition process as well as simultaneous pasteurization, the pasteurized portion of the mass being movable from the region at the heat source with the help of a stirring means rotatable about a horizontal axis; the improvement wherein an opening (**18**) is provided in one side of the chamber for discharging material with the help of the stirring means, an electric motor (**24**) for rotating the stirring means, and means for reversibly driving the motor in either direction, whereby when the stirring means moves down across said opening, material in the chamber is agitated without being discharged through the opening, whereas when the motor is operated in the reverse direction and the stirring means moves up across the opening, material is discharged by the stirring means through the opening.

4,343,052

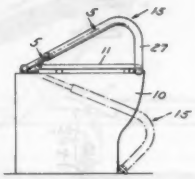
TOILET SUPPORT

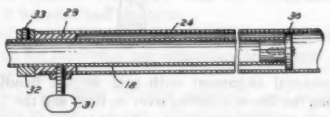
Torbett B. Guenther, Plymouth, Mich., assignor to C. D. Sparling Company, Plymouth, Mich.

Filed Sep. 2, 1980, Ser. No. 182,852

Int. Cl.³ A47K *17/02*

U.S. Cl. 4—254 **16 Claims**





1. In a toilet support for use with a toilet bowl, the combination comprising

a pair of first arm portions,

bearing means adapted to be mounted on said toilet bowl for mounting said arm portions on said toilet bowl,

a pair of second arm portions mounted on said first arm portions and movable generally axially of said first arm portions,

means joining the ends of said second arm portions such that said first and second arm portions can be moved about said bearing means and axially relative to one another such that in a first position the means connecting the second arm portions engage the edge of the toilet bowl and in another position the first and second arm portions are extended relative to one another such that the connecting portion can engage the floor adjacent the bowl and forwardly thereof.

4,343,053

DISPOSABLE BEDPAN LINER

Nicholas E. O'Connor, 18 Cramond Rd., Chestnut Hill, Mass. 02167

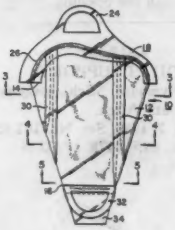
Filed Jul. 11, 1980, Ser. No. 168,328

Int. Cl.³ A61G *9/00*

U.S. Cl. 4—452 **12 Claims**

1. A disposable liner for bedpans and the like comprising an elongated liquid impervious flexible sleeve having oppositely disposed open ends; the liner having a mouth which is defined at one of said ends of said sleeve and having first handle means comprising a pair of handles movable towards and away from one another to provide the closed and open positions of the mouth of said liner and to allow the mouth of said liner to be closed after use by a patient, wherein each of said pair of handles has a respective marginal seat section connected thereto, with said one end of the sleeve connected to the mar-

ginal seat sections to further define the mouth of the bedpan liner, the marginal seat sections, in the open position of the mouth, being adapted to overlie at least part of the seat portion of a bedpan; and a second handle means connected adjacent the other of said open ends so that when being positioned on a bedpan one handle of said pair of handles can be put into



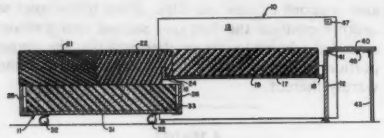
substantial alignment with said second handle means, and when the sleeve is folded over on itself and the first and second handle means are brought and held together, a purse-like structure is provided with the thus folded over sleeve forming a pouch for containing waste matter, and wherein release of said second handle means allows the sleeve to unfold and the waste matter to pass outwardly through said other of the open ends.

4,343,054

SOFA BED COMBINATION

Dan S. Kane, 1329 Lombard St., Apt. 111, Philadelphia, Pa. 19147

Filed Jan. 28, 1980, Ser. No. 116,127
Int. Cl.³ A47C *17/13, 17/37*
U.S. Cl. 5—18 R **11 Claims**



1. A sofa-bed combination comprising a floor-supported sofa frame including a bolster member support surface adjoined with spaced-apart end walls which are further interconnected by a front crossplate enclosing an area containing cushion support means carried by the sofa frame above the floor, the space between said cushion support means and the floor defining a storage area,

a cushion carried by said cushion support means,

a floor-supported trundle bed receivable within said storage area for withdrawal therefrom to form a lateral extension of said cushion support means, said trundle bed including a cushion support means and a cushion supported thereby, said cushions being dimensionally equivalent, and

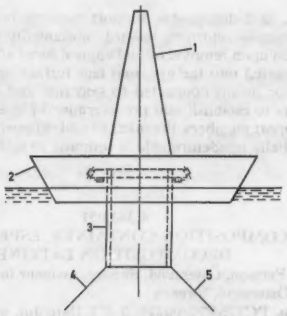
two bolster members adapted to form a sofa back cushion by superimposed positioning into a face-to-face arrangement for support by said sofa frame, said two bolster members being dimensioned for side-by-side positioning and support by the cushion support means of the trundle bed upon positioning of said trundle bed to form an extension to the cushion support means of the sofa frame, said bolster members having a thickness which together with the total height of said trundle bed top surface forms a coplanar extension of said cushion to thereby form a bed of essentially standard conventional dimensions and at a conventional height above the floor.

4,343,055

ROLLER SUSPENSION

Gunnar Bergling, Partille, Sweden, assignor to Aktiebolaget SKF, Goteborg, Sweden

Filed Dec. 19, 1979, Ser. No. 105,029
Claims priority, application Sweden, Jan. 18, 1979, 7900442
Int. Cl.³ B63B *21/52*
U.S. Cl. 441—3 **10 Claims**



1. An assembly supporting one member (2) rotatable about a mainly vertical axis on another member (3) and adapted to transfer forces parallel to and/or perpendicular to the vertical axis of rotation comprising a pair of annular race tracks arranged on said other member and a plurality of rollers journalled in bearings at opposite axial ends on said one member, said rollers disposed in two rows, the rollers of one row engaging one of said race tracks and the rollers of said other row engaging said other race track, the axes of the rollers of said one row forming an acute angle to the axes of the rollers of said other row in a plane parallel to said vertical axis of rotation, the bearings for the rollers being mounted in separate retainers arranged on both axial ends of each roller, the retainers for at least one of the rows of rollers being resiliently carried by support members including adjustable resilient means so that the rollers of both rows engage their respective associated race track under preload.

4,343,056

MAN-OVERBOARD RESCUE APPARATUS FOR SAILBOATS

Charles D. McDonald, 7906 Royal La., Dallas, Tex. 75230

Filed May 5, 1980, Ser. No. 146,505
Int. Cl.³ B63C *9/00*
U.S. Cl. 441—84 **5 Claims**

1. Man-overboard rescue apparatus for use on a sailboat having at least one mast supported by shrouds on both the port and starboard sides of the boat extending from a point at least part way up the mast to a point adjacent the boat deck, said apparatus comprising

boom means;

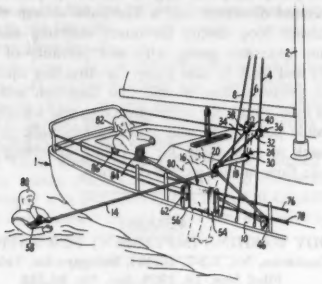
mounting means for attaching said boom to said shrouds on one side of the boat and providing for movement of said boom means between a stowed position generally parallel

to said shrouds and an extended position with the outer end of said boom means projecting outboard of said shrouds;

a recovery line having one end attached to said boat and the other end being fed through guide means attached adjacent said boom means outer end;

sling means attached to said recovery line other end and being adapted to encircle the chest of the man overboard;

container means attached to said boat for releasably containing said sling means and the portion of said recovery line adjacent said sling means, said container means having selectively openable closure means which, in its closed configuration, provides for substantially complete enclosure for said sling means and said recovery line portion and, in its open configuration, provides for quick removal of said sling and said recovery line portion therefrom, whereby the container may be opened and the sling and recovery line quickly removed therefrom and tossed to the man overboard.



4,343,057

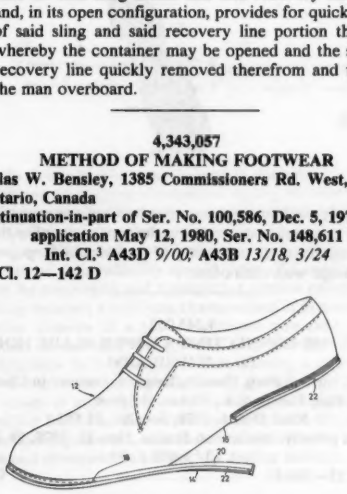
METHOD OF MAKING FOOTWEAR

Douglas W. Bensley, 1385 Commissioners Rd. West, London, Ontario, Canada

Continuation-in-part of Ser. No. 100,586, Dec. 5, 1979. This application May 12, 1980, Ser. No. 148,611

Int. Cl.³ A43D *9/00;* **A43B** *13/18, 3/24*

U.S. Cl. 12—142 D **3 Claims**



1. A method of making an article of footwear including providing a preformed forward upper part and a preformed rear upper part, each upper part having a pair of laterally spaced lower edge portions, attaching a first connecting strip to the edge portions of the forward and rear upper parts on one side thereof, attaching a second connecting strip to the edge portions of the forward and rear upper parts on the opposite side thereof, each connecting strip having a profiled section providing a projecting extension, providing a preformed sole unit with a peripheral wall internally profiled for snapping engagement with the projecting extensions of the connecting strips, and snapping the projecting extensions of the connecting strips into engagement with the sole unit on opposite sides thereof to position the forward and rear upper parts thereon.

4,343,058

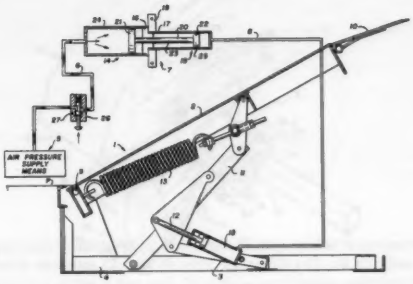
COMPOSITE PNEUMATIC-HYDRAULIC SYSTEM IN A DOCKLEVELLER INSTALLATION

Norton M. Loblick, Edmonton, Canada, assignor to Argo Engineering Ltd., Edmonton, Canada

Filed Oct. 31, 1980, Ser. No. 202,487

Int. Cl.³ E01D *1/00*

U.S. Cl. 14—71.7 **1 Claim**



1. In a dockleveller installation, the combination comprising:

a dockboard hinged at its inner edge for pivoting movement between cross-traffic and bridging positions;

a hydraulic cylinder connected with the dockboard for biasing it between said positions;

pressurized air supply means and a first conduit extending therefrom for supplying and exhausting pressurized air;

a multiplier comprising

connected air and fluid cylinder segments, said segments combining to form a closed cylindrical member, the interior cross-sectional area of the air segment being greater than that of the fluid segment;

a double-headed piston disposed in the cylindrical member, said piston having a first piston head which reciprocates within the air segment and sealably engages it, a second piston head which reciprocates within the fluid segment and sealably engages it, and means rigidly interconnecting said piston heads;

said first conduit interconnecting the air supply means with the air segment, for supplying pressurized air into said segment and exhausting it therefrom; and

a second conduit, interconnecting the fluid segment with the hydraulic cylinder, for supplying pressurized fluid into the cylinder and exhausting it therefrom.

4,343,059

RADIOACTIVE HOT CELL ACCESS HOLE DECONTAMINATION MACHINE

William E. Simpson, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,643

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—21 E **8 Claims**

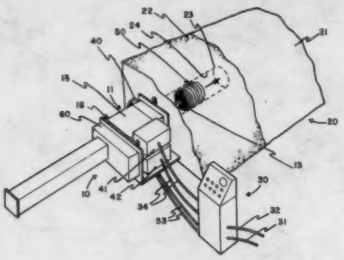
1. A system for removing radioactive contamination from the wall of a generally horizontal right circular cylindrical access hole in a chamber suitable for containing radioactivity, comprising:

(a) a portable housing, outside said chamber, having an opening, said housing moveable for positioning said opening in front of and proximate said access hole, and said opening large enough to encompass said access hole;

(b) a radiation shielding door attached to said housing and covering said opening, said shielding door providing a barrier to radioactivity;

(c) means for opening and closing said shielding door;

(d) a shaft, having a longitudinal axis and an end, disposed generally horizontally within said housing;
(e) means for rotatably moving said end of said shaft about said longitudinal axis;
(f) means for translatably moving said end of said shaft, along said longitudinal axis, from an initial position within said housing out through said opening and said access hole, without contacting said wall, into said chamber, and moving said end of said shaft back to said initial position;



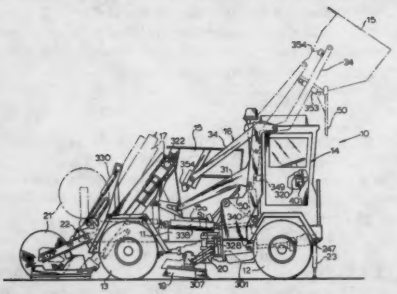
(g) a generally right circular cylindrical cleaning pig having a sufficient diameter for said pig to circumferentially and compressibly contact said wall; and
(h) means for attaching said cleaning pig to said end of said shaft so that said end of said shaft rotates said pig and pushes said pig from within said housing out through said opening and said access hole into said chamber, said pig circumferentially and compressibly contacting said wall to remove radioactive contamination thereon, and so that thereafter said pig detaches from said end of said shaft to fall into said chamber.

4,343,060

HYDRAULIC CONTROL SYSTEM FOR A STREET SWEEPER

Donald L. Hildebrand, Union, and Ernest F. Prescott, Elgin, both of Ill., assignors to Elgin Sweeper Company, Elgin, Ill.

Filed Jul. 18, 1980, Ser. No. 169,939
Int. Cl.³ E01H *1/04*
U.S. Cl. 15—84 **10 Claims**



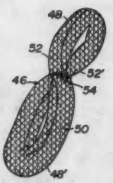
1. A street sweeper having a frame with an engine mounted on said frame for powering the street sweeper for movement along a sweeping surface, a series of operating mechanisms mounted on said frame to assist in a street sweeping pick-up operation and a plurality of hydraulic motors arranged to power said operating mechanisms and a series of hydraulic components arranged to move said operating mechanisms into a street sweeping pick-up position and into a retracted position wherein the improvement comprises:
a variable volume and reversible hydraulic pump which is suitably driven by said engine and operatively associated with said plurality of hydraulic motors when said pump is regulated to produce fluid pressure flow in a first direction and which is operatively associated with said series of hydraulic components when said pump is regulated to produce fluid pressure flow in a second direction;
means to selectively regulate said pump as a variable volume pump for producing fluid pressure flow in said first direction at a consistent preset output irrespective of the driving speed of said engine and to selectively regulate said pump as a fixed volume pump for producing reversed fluid pressure flow in said second direction, and a hydraulic system including a first closed loop circuit for interconnecting said variable volume reversible pump with said plurality of hydraulic motors and back to said pump for directing operating hydraulic pressure flow in said first direction and a second closed loop circuit for interconnecting said variable volume reversible pump with said series of hydraulic components and back to said pump for directing operating hydraulic pressure flow in said second direction.

4,343,061

BODY WASHING IMPLEMENT FOR BATHING

Yoko Hanazono, No. 3-3-7, Ikejiri, Setagaya-ku, Tokyo, Japan

Filed Nov. 14, 1979, Ser. No. 94,332
Claims priority, application Japan, Jan. 17, 1979, 54-4163[U]; Jun. 7, 1979, 54-77400[U]; Sep. 10, 1979, 54-124936[U]
Int. Cl.³ A47K *7/02*
U.S. Cl. 15—244 B **20 Claims**



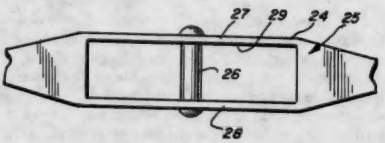
1. A body washing implement, comprising a sponge member having a covering web wrapping the sponge member therein, said sponge member consisting of two closed loop portions which merge with each other.

4,343,062

DEVICE FOR CONNECTING A WIPER BLADE HOLDER TO A WIPER ARM

Johan H. van den Berg, Hasselt, Belgium, assignor to Champion Spark Plug Europe S.A., Virton, Belgium

Filed Oct. 4, 1979, Ser. No. 81,681
Claims priority, application France, Oct. 19, 1978, 78 29787
Int. Cl.³ B60S *1/40*
U.S. Cl. 15—250.32 **17 Claims**



1. An adaptor (30,130,230,530,630) mounted between a wiper blade (25) and a wiper arm (21,121,221,221A,321,421, 621), said wiper blade (25) having a crosspin (26) extending between a pair of spaced walls (32,33; 132–133; 232; 532; 632,633), said adaptor (30,130,230,530,630) comprising:

a body (31,131,231,531,631) having an upper portion (39,139,239,539,639) and a lower portion (40,140,240,540,640);

said upper portion (39,139,239,539,639) of said body (31,131,231,531,631) receiving any one of several types of wiper arm ends (20,120,220,220A,320,420,620);

said lower portion (40,140,240,540,640) of said body (31,131,231,531,631) receiving said cross-pin (26) of said blade (25);

spring means (41,141,241,541,641) integrally formed with said body (31,131,231,531,631) between said upper portion (39,139,239,539,639) and said lower portion (40,140,240,540,640);

first latch means (44,144,244,544,644) carried by said spring means (41,141,241,541,641) and cooperating with said cross-pin (26) to prevent deflecting of said spring means (41,141,241,541,641) with respect to the wiper arm end (20,120,220,220A,320,420,620); and

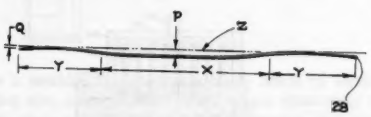
second latch means (45,145,245,545,645) carried by said spring means (41,141,241,541,641) and cooperating with the wiper arm end (20,120,220,220A,320,420,620) to prevent displacement of said wiper arm end with respect to said adaptor (30,130,230,530,630).

4,343,063

WINDSHIELD WIPER ASSEMBLY

Richard A. Batt, Williamsville, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,886
Int. Cl.³ B60S 1/38
U.S. Cl. 15—250.42 9 Claims



1. In a windshield wiper assembly including a refill unit comprising an elongate elastomeric wiping element supported by an elongate flexible backing member for distributing pressure applied at spaced points along its length over the length of the wiper blade and an articulated superstructure having a plurality of longitudinally spaced pairs of laterally opposed claws for supporting and transmitting applied pressure to said backing member; a refill unit characterized in that said backing member consists of a pair of elongate side rails connected together at the ends thereof and is of sinuous non-angular configuration in longitudinal section defining a central zone of convex curvature on the side facing the wiping element and end zones of concave curvature facing the wiping element extending from the ends of the central zone to the outer ends of the backing element, said end zones each having its free end displaced downwardly toward the wiping element.

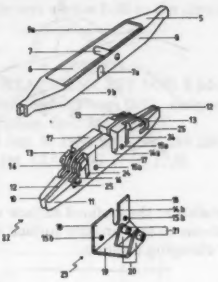
4,343,064

DEVICE FOR CONNECTING A WIPER BLADE HOLDER TO A WIPER ARM

Johan H. van den Berg, Hasselt, Belgium, and Guiseppe Maiocco, Rivoli, Italy, assignors to Champion Spark Plug Europe S.A., Virton, Belgium

Filed Jan. 4, 1980, Ser. No. 109,555
Claims priority, application Italy, Jan. 5, 1979, 67020 A/79
Int. Cl.³ B60S 1/40
U.S. Cl. 15—250.32 10 Claims

1. A connecting device between the superstructure of a wiper blade and the free end portion of a wiper arm wherein the upper central portion of said superstructure is provided with a substantially rectangular opening and wherein said wiper arm has a bore (2) and a flexible spring clip (3), characterized in that at least one relatively resilient part (10,11 32,42) is snap-fitted into said opening (6), means (13,38,48) carried by the first part (10,11 32,42) cooperating with the edge of said opening (6) for positioning said first part in said opening, one other part (23,30,40) being carried by said first part and being



provided with holding means (21,31,41) capable of cooperating with the bore (2) and flexible spring clip (3) on the free end portion of the wiper arm (1) such as to maintain said arm (1) in its working position with respect to the superstructure (5) of the wiper blade.

4,343,065

LOCK AND HINGE ROTARY DEVICE

Michel Liber, Paris, France, assignor to Seilib, France

Filed Mar. 12, 1980, Ser. No. 129,808
Claims priority, application France, Sep. 5, 1978, 78 25485
Int. Cl.³ E05D 7/12, 9/00
U.S. Cl. 16—225 2 Claims

1. A lock rotary device for two parts to be locked together, having two semi-circular bolts not attached one to the other, each bolt carrying a bead on the edge of the semi-circle and a laterally projecting bead, characterized in that it can realize a supplementary function consisting in hinging said two parts, after said parts have preliminarily been locked, each of said bolts becoming then a semi-circular flap carrying a hinge portion disposed in such a way that when the diameters of said flaps lie side by side, the hinge portions of the flaps are aligned with one another and do not lie along either of the said diameters, said parts being effectively hinged when said hinge portions being aligned are moreover in the alignment of the end faces of said parts.

4,343,066

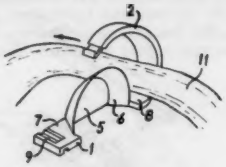
TUBE CLAMP

Mark A. Lance, Pascoe Vale Sth, Australia, assignor to Illinois Tool Works, Chicago, Ill.

Filed Sep. 29, 1980, Ser. No. 191,587
Claims priority, application Australia, Oct. 15, 1979, PE0930
Int. Cl.³ A22B 5/00
U.S. Cl. 17—1 R 13 Claims

1. A clamp, for closing a flexible tube, comprising a base and a strap, said base having a projecting generally arcuate surface

inclined in relation to the longitudinal direction of the tube to be closed, said strap adapted for clamping the tube against said inclined surface, and means for securing the strap in its clamping position relative to the inclined surface wherein said strap generally conforms to said arcuate surface when said strap is secured in the clamping position.

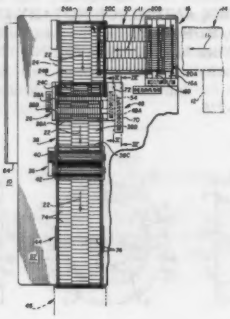


4,343,067

MEAT CUTLET TENDERIZING MACHINE

Charles L. Shelton, Garland, Tex., assignor to Quik-to-Fix Products, Inc., Garland, Tex.

Filed May 23, 1980, Ser. No. 152,662
Int. Cl.³ A22C 9/00
U.S. Cl. 17—26 **3 Claims**



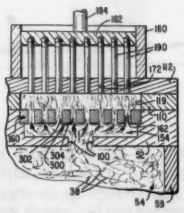
1. Meat tenderizing apparatus comprising, in combination:
a loading station;
a first processing station;
a first conveyor assembly having a loading end, an intermediate transporting section and a delivery end for transporting meat cutlets in a first direction of feeding movement from said loading station to said first processing station;
a first array of coacting rollers disposed below and adjacent the first conveyor assembly in the first processing station and extending across the delivery end of the first conveyor assembly for receiving cutlets, said coacting rollers having radially projecting tenderizing elements for engaging opposite faces of the cutlet and tenderizing the cutlet along parallel lines;
an inverting station;
a second conveyor assembly having a loading end disposed below and adjacent said first array of coacting rollers for receiving cutlets as they are discharged from said coacting rollers, an intermediate transporting section and a delivery end for transporting cutlets in said first direction of feeding movement to the inverting station;
a second processing station;
a third conveyor assembly extending in a second direction of feeding movement transversely with respect to the first direction of feeding movement, said third conveyor having a loading end, a delivery end and an intermediate section for transporting cutlets from the inverting station to said second processing station, the loading end of said third conveyor assembly being disposed in the inverting station at a lower elevation relative to the delivery end of the second conveyor assembly to permit free fall and rotational inversion of said cutlet so that it is delivered in upside down position onto said third conveyor assembly;
a second array of coacting rollers disposed below and adjacent the third conveyor assembly in the second processing station and extending across the delivery end of the third conveyor assembly for receiving the inverted cutlets, said coacting rollers having radially projecting tenderizing elements for engaging opposite faces of the inverted cutlets and tenderizing the cutlets along parallel lines which extend transversely with respect to the parallel tenderizing lines produced in the first processing station;
a delivery station; and
a fourth conveyor assembly having a loading end disposed below the coacting rollers of the second array for receiving the cutlets as they are discharged from said coacting rollers, an intermediate transporting section and a delivery end for transporting cutlets in said second direction of feeding movement to the delivery station.

4,343,068

METHOD AND APPARATUS FOR UNIDIRECTIONAL FORMATION OF A PLUG-FORMED PATTY WITH CLEANOUT FEATURE

James A. Holly, 5728 W. 129th St., Crestwood, Ill. 60445

Filed Jan. 19, 1981, Ser. No. 226,211
Int. Cl.³ A22C 7/00
U.S. Cl. 17—45 **6 Claims**



1. A method for forming a patty of plastic food material containing tissue fibers, including ground meat and the like, said method comprising:
(a) providing a foraminous member having an upstream side and a downstream side with apertures therein communicating between said upstream side and said downstream side;
(b) providing mold parts defining a mold opening and at least a portion of a mold cavity having the shape of at least a portion of the exterior surface of said patty and positioning said mold parts to dispose said mold opening adjacent said downstream side of said foraminous member;
(c) forcing said food material under pressure from the upstream side of said foraminous member through said apertures to the downstream side of said foraminous member and into said mold opening as discrete extrudate masses which together define a packed array forming said patty;
(d) moving at least some of said mold parts away from said foraminous member to carry said formed patty therewith and expose the downstream side of said foraminous member; and
(e) providing a plurality of rigid probe members, each of said rigid probe members associated with a foraminous member aperture, and inserting said probe members into at least some of said foraminous member apertures from said downstream side for dislodging tissue fibers that may have lodged on the upstream side of said member.

4,343,069

FIBER CUTTING MACHINE

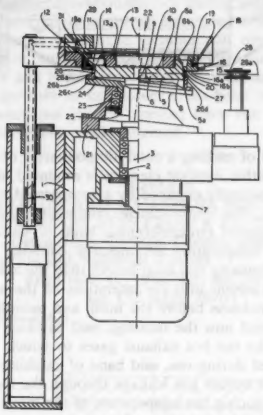
Albert McLuskie, Aukrug-Buenzen; Johann Ratjen, Willenscharen, and Ernst Vehling, Bordesholm, all of Fed. Rep. of Germany, assignors to Neumuenstersche Maschinen- und Apparatebau GmbH (NEUMAG), Neumuenster, Fed. Rep. of Germany

Filed Sep. 25, 1980, Ser. No. 190,821

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1979, 2939154

Int. Cl.³ D01G *1/04*

U.S. Cl. 19—0.6 15 Claims



1. In a machine for producing staple fibers by cutting a travelling tow, a combination comprising a rotationally symmetrical blade carrier having a circumferential first surface shaped in conformance with a portion of a sphere; a plurality of cutting blades on said carrier, circumferentially distributed thereabout and having portions projecting therefrom; a mounting ring secured on said portions of said blades and having a circumferential second surface shaped in conformance with a portion of a hollow sphere concentric to said first surface and defining therewith an annular channel across which said blades extend; a tow pressing ring extending at one side of said channel into the same and close to said blades and being at the opposite side of said channel located outside the same and in part defining a tow inlet gap communicating with said channel, said pressing ring having an axis which is inclined to an axis of said blade carrier and intersects it at the center of curvature of said spheres; and means rotatably mounting at least one of said blade carrier and pressing ring with freedom of adjusting its speed of rotation to the other of said pressing ring and blade carrier, respectively.

4,343,070

REMOVAL OF LINT FROM COTTONSEED

Clinton P. Wade, Jefferson, and Stanley P. Rowland, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 25, 1980, Ser. No. 180,542

Int. Cl.³ D01B *1/04;* F26B *19/00*

U.S. Cl. 19—40 8 Claims

1. A process for the improvement of cotton-ginning by chemical treatment to render lint ameanable to easy removal from cottonseed without affecting the strength of the fiber or the fabric made therefrom, the process comprising:

(a) impregnating the open cotton boll with an aqueous solution containing one or more compounds selected from the group consisting of:

a certain wetting agent, and

a hemicellulase from the Aspergillus niger Series,

(b) allowing time for the point of attachment of the lint to the seedcoat to respond to the action of the wetting agent or the action of the enzyme, and

(c) subjecting the wet cotton boll to the ginning process.

4,343,071

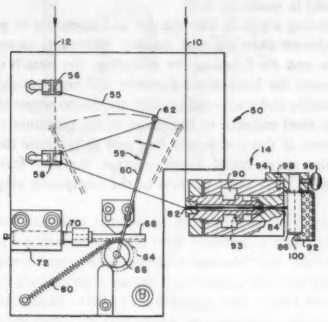
AIR TREATMENT JET FOR YARN

William J. Schroder, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 8, 1980, Ser. No. 185,250

Int. Cl.³ D02G *1/16, 1/20*

U.S. Cl. 28—254 1 Claim



1. An improved yarn commingling gaseous fluid jet comprising: a body member, a central passage through said body member for the passage of yarn, means to supply a gaseous fluid under pressure into said central passage, a mounting bar connected to the top of said body member and projecting outward therefrom beyond the outlet from said central passage, means forming an opening in said mounting bar in the portion thereof projecting beyond said central passage, an impact member secured in said opening and projecting downwardly from said mounting bar to a position adjacent the outlet of said central passage, a perforated cage held by said impact member against the bottom of said mounting bar and surrounding said impact member, said cage member being open at the bottom thereof to allow yarn to exit therefrom.

4,343,072

METHOD OF MANUFACTURING COMPOSITE RINGS FOR BEARINGS

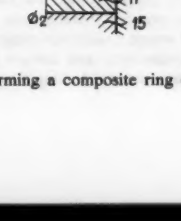
Jean Beauchet, Veyrier du Lac, France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed Sep. 24, 1979, Ser. No. 78,453

Claims priority, application France, Sep. 25, 1978, 78 27347

Int. Cl.³ B21D *53/10*

U.S. Cl. 29—149.5 DP 8 Claims



1. A process of forming a composite ring consisting of a

particulate material portion on which is secured a sintered steel sheet portion, comprising:

positioning a sheet metal blank on a particulate steel material in the form of a cylindrical rough shaped body;

compressing said sheet metal blank together with the particulate steel material under pressure ranging from 20 to 100 Kg/mm^2 at a first temperature ranging from 300° to 700° C.;

sintering said compressed sheet metal blank and particulate steel material at a second temperature ranging from 1100° to 1200° C. to form an assembly;

cooling the assembly to a third temperature ranging from 950° to 1000° C;

positioning the assembly in a die and contacting the assembly with a blank hold-down member so that the assembly is held in position; and

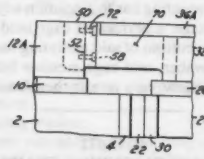
introducing a punch into the die and assembly to perform a combined drawing and density increasing operation by press and die forming the assembly, the punch operating through the hold-down member and penetrating into the assembly and cooperating with the die to shape the particulate steel material to the shape of the particulate material portion of the composite ring and to increase the density of the sheet metal blank portion thereby forming the sintered steel sheet portion of the composite ring.

4,343,073

BASE SUPPORT FOR TRANSFER MACHINES

John H. Brems, 32867 White Oaks Trail, Birmingham, Mich. 48010

Filed Apr. 18, 1980, Ser. No. 141,601
Int. Cl.³ B23P *23/00*; B23Q *1/02*
U.S. Cl. 29—38 C **2 Claims**



1. In a multiple station transfer machine in which workpieces are located and clamped in pallets and in which said pallets are sequentially moved on rails from station to station to be located on registry means at each station independent of said rails and in which each working station comprises:

1. base means,

2. registry means rigidly mounted on said base means and adapted to support, locate, and clamp a pallet in a fixed position, and

3. tooling means mounted on said base means and adapted to feed tools on a first axis into said workpiece supported on a pallet and in turn on said registry means,

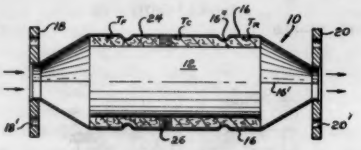
that improvement which comprises a direct, positive, in-line connection means extending between and rigidly connecting said registry means and said tooling means on a second axis in close proximity to said first axis and exclusive of the indirect connection therebetween through said base means, said in-line connection means being structured to transmit compression and tension forces between said registry means and said tooling means.

4,343,074

METHOD OF MAKING A CATALYTIC CONVERTER

Charles H. Bailey, Mt. Prospect; Ted V. De Palma, Schaumburg, and James E. Dillon, Elgin, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 86,990, Oct. 22, 1979, Pat. No. 4,269,807.
This application Nov. 10, 1980, Ser. No. 205,555
Int. Cl.³ B23P *15/00*; F01N *3/28*
U.S. Cl. 29—157 R **3 Claims**



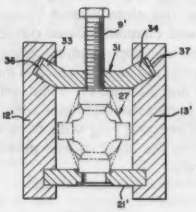
1. In a method of making a catalytic converter of the type wherein a monolithic catalyst element is mounted in a metal housing and is resiliently engaged by a compressed blanket of metal wire mesh, the improvement comprising the step of injecting a continuous circumferential band of viscous fiber reinforced high temperature intumescent caulking material which is of substantially less axial length than the axial length of said catalyst element into the interstices of the mesh and throughout its thickness before the mesh and monolithic element are assembled into the housing, said caulking material being expanded by the hot exhaust gases to which the converter is subjected during use, said band of caulking material serving to reduce bypass gas leakage through the metal wire mesh and also reducing the temperature of the metal mesh.

4,343,075

TOOL FOR DISASSEMBLY OF AUTOMOTIVE UNIVERSAL JOINTS

Robert H. Guptill, 4839 Snow Dr., San Jose, Calif. 95111, and Raymond G. Penrod, San Jose, Calif., assignors to Robert H. Guptill, San Jose, Calif.

Filed Mar. 10, 1980, Ser. No. 128,904
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—251 **2 Claims**



1. A portable tool for effecting the disassembly of a vehicular-type universal joint from the drive-shaft bearing yoke on which it is normally mounted,

(a) an upper cross-head member having a threaded aperture therethrough;

(b) a pair of oppositely disposed tension members engaging opposite edge portions of said upper cross-head member and extending therefrom in spaced parallel relation to one another and terminating in free end portions having abutments thereon;

(c) a lower cross-head member having opposite edge portions engaging said abutments and restricted against movement in a direction away from said upper cross-head member by said abutments and engageable with said abut-

ments by movement in a direction transverse to said tension members, said lower cross-head member having an aperture therein the axis of which is coincident with the axis of the aperture in said upper cross-head member when said lower cross-head member is properly positioned on said abutments by transverse movement thereof between said tension members, said upper cross-head member including a central body portion and integral inclined edge portions on said body portion, the abutments on the free end portions of said tension members being correspondingly inclined whereby tension imposed on said tension members when engaged on said inclined edge portions imposes a force on said tension members tending to prevent separation thereof during use of the tool; and

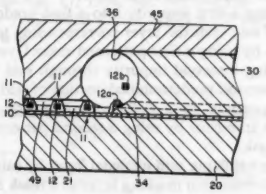
(d) pressure applying means associated with the aperture in said upper cross-head member and operable to impose pressure on a universal joint positioned between said upper and lower cross-head members and oriented with the aperture in said lower cross-head member whereby the universal joint is pressed from the bearing yoke in which it is normally retained.

4,343,076

APPARATUS, AND A METHOD, FOR REMOVING TERMINAL PINS FROM A BANDOLIER

Harold J. Ostapovitch, Lachine, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 17, 1980, Ser. No. 207,271
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—426.5 **12 Claims**



1. Apparatus for removing terminal pins from a bandolier, comprising:

a base and a top defining a slot therebetween for passage of the bandolier;

at least one rib extending into the slot and having a chamfered forward end, said forward end adapted to enter a clearance between the terminal pin and the bandolier, the bandolier passing beneath the rib and the pin ejected upward from the bandolier;

a transverse passage above said forward end of said rib, said passage having an exit at one end for emission of pins therethrough and having an inclined surface on the side of the rib remote from the exit, the inclined surface extending over the forward end of the rib, whereby the pins removed from the bandolier hit the inclined surface and are impelled laterally to the exit.

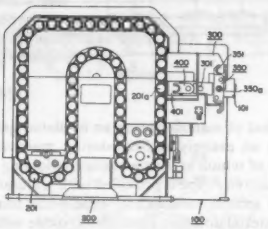
4,343,077

AUTOMATIC TOOL EXCHANGING APPARATUS OF MACHINE TOOL

Mitsuharu Satoh, and Katsuyoshi Aiso, both of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1980, Ser. No. 142,756
Claims priority, application Japan, Apr. 29, 1979, 54-52734
Int. Cl.³ B23Q *3/157*; B66C *1/42*
U.S. Cl. 29—568 **6 Claims**

1. In an automatic tool exchanging apparatus of a machine tool of the type comprising a machine body, a magazine for storing a number of tools located on the side of said machine body, a spindle of the machine tool, a tool exchanging mechanism and a tool conveying mechanism which are located between said spindle and said tool storage magazine, and means for driving said tool exchanging and conveying mechanisms, said tool exchanging mechanism being provided with an intermediate tool pot and constructed to be swingable for exchanging a tool fitted in said spindle with a tool received in said intermediate tool pot, and said tool conveying mechanism being adapted to transfer a tool between a predetermined tool pot of said tool storage magazine and said intemediate tool pot, the improvement in which said tool conveying mechanism comprises a guide bar horizontally arranged between a predetermined position of said magazine and said intermediate tool



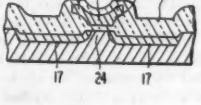
pot, a tool carriage supported movably by said guide bar, means for reciprocating said tool carriage, a tool conveying arm member supported rotatably by said tool carriage and adapted to clamp a tool, means for rotating said conveying arm member mounted to said tool carriage, and means for linearly reciprocating said tool conveying arm member, said means for rotating said tool conveying arm member comprising a hydraulic cylinder-piston assembly, a cylinder of said assembly being movable, a rack member formed on one outer side surface of said cylinder, a pinion in engagement with said rack member, and a rotation shaft rotatable together with said pinion, one end of said rotation shaft being operatively connected to said tool conveying arm member.

4,343,078

IGFET FORMING METHOD

Isamu Miyagi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,337
Claims priority, application Japan, Mar. 5, 1979, 54/25291; Jun. 7, 1979, 54/71406
Int. Cl.³ H01L *21/28, 21/22*
U.S. Cl. 29—571 **8 Claims**



1. A method of defining a gate structure for use in an insulated gate field effect transistor comprising the steps of forming a first insulator film on a first region of a semiconductor substrate; forming a second insulator film on a second region of said semiconductor substrate directly adjacent to said first region, said first insulator film being thicker than said second insulator film; forming a continuous layer of a high melting point material on said first and second insulator films in such a manner that a first portion of said layer lies on said first insulator film and a second portion of said layer lies on said second insulator film, removing at least a part of said first insulator film under said first portion of said layer to form a cavity under said first portion of said layer.

4,343,079

SELF-REGISTERING METHOD OF MANUFACTURING AN INSULATED GATE FIELD-EFFECT TRANSISTOR

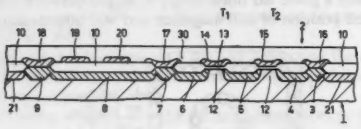
Pieter J. W. Jochems, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1980, Ser. No. 141,510

Claims priority, application Netherlands, Apr. 23, 1979, 7903158

Int. Cl.³ H01L 21/26

U.S. Cl. 29—571 8 Claims



1. A method of manufacturing an insulated gate field effect transistor in an entirely self-registering manner, in which a silicon body of which at least a surface-adjoining sub-region is of one conductivity type is provided with a plurality of surface zones of the second conductivity type while using a masking layer of a material differing from silicon oxide which masks the underlying material of the semiconductor body against oxidation, from which zones the source and drain zones of the transistor are formed, and said body is then provided, by means of an oxidation treatment, with an oxide pattern which is sunk in the silicon body over at least a part of its thickness and which extends above the surface zones and above the adjoining parts of the silicon body and which comprises a plurality of apertures which define mesa-shaped regions of the semiconductor body which form the channel region of the transistor and contact regions of the zones which in the mesa-shaped regions adjoin the surface of the body beside the sunken oxide pattern, characterized in that, before forming the surface zones, a first strip-shaped mask is formed from said masking layer and covers the surface parts of the semiconductor body where the surface zones, the contact regions and the channel region are formed and does not cover the adjoining parts of the semiconductor body, and in that, while using said first mask as a doping mask, an impurity of one conductivity type is provided in the adjoining parts of the semiconductor body and said adjoining parts are provided with a first oxide layer while using the same mask as an oxidation mask, after which the first mask is subjected to a selective etching treatment in which parts of the first mask extending transversely over the whole width of the strip are removed at the area of the surface zones to be provided and a second mask is obtained from the first mask which covers the channel region of the transistor and the contact regions of the zones and which together with the first silicon oxide layer forms a third mask with windows above parts of the semiconductor body where the surface zones are provided, after which an impurity of the second conductivity type is provided in the exposed parts of the semiconductor body through said windows, after which the sunken oxide pattern is provided by means of an oxidation treatment in which semiconductor body is locally masked against oxidation by the second mask, said mesa-shaped regions being thereby defined, the impurities of the second and the first conductivity type provided in the semiconductor body diffusing further into the semiconductor body to form, respectively, the surface zones of the second conductivity type comprising the source and drain zones of the transistor and, in the adjoining parts of the semiconductor body, channel stopping zones of the same conductivity type as the semiconductor body and with a higher doping concentration, after which the remaining parts of the masking layer masking against oxidation and forming the second mask are removed entirely and an insulated gate electrode of the field effect transistor and contacts for the surface zones are provided in the apertures thus exposed in the sunken oxide pattern.

4,343,080

METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

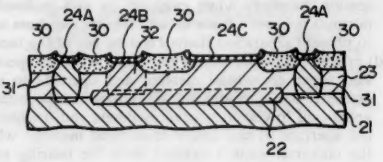
Osamu Hataishi, Yokohama; Yoshinobu Momma, and Ryoji Abe, both of Sagamihara, all of Japan, assignors to Fijitsu Limited, Kawasaki, Japan

Filed May 30, 1980, Ser. No. 155,122

Claims priority, application Japan, May 31, 1979, 54/67611

Int. Cl.³ H01L 21/22

U.S. Cl. 29—571 6 Claims



1. A method of producing a semiconductor device comprising at least on bipolar transistor and an isolation region which are formed in an epitaxial layer formed on a semiconductor substrate having a buried layer, said method comprising, in sequence, the steps of:

forming an anti-oxidation masking layer on said epitaxial layer,

selectively removing said masking layer by etching to expose portions of said epitaxial layer,

thermally oxidizing said exposed portions of the epitaxial layer to form a thin oxide layer,

introducing a first impurity into a first predetermined portion of said epitaxial layer corresponding to said isolation region by using a first patterned resist layer as a mask,

introducing a second impurity through said masking layer into a second predetermined portion of said epitaxial layer corresponding to a collector-connecting-region of the bipolar transistor by using a second patterned resist layer as a mask,

thermally oxidizing said epitaxial layer by using the remaining anti-oxidation masking layer as a mask to form a thick oxide layer, while at the same time diffusing said introduced first and second impurities into said epitaxial layer to form said isolation region and said collector-connecting-region coming into contact with said buried layer, respectively, and

forming a base region and an emitter region of the bipolar transistor in a portion of said epitaxial layer above said buried layer.

4,343,081

PROCESS FOR MAKING SEMI-CONDUCTOR DEVICES

Francois Morin, Lanmerin, and Madeleine Bonnel, Lannion, both of France, assignors to L'Etat Francais represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunications), Issy les Moulineaux, France

Filed Jun. 17, 1980, Ser. No. 160,213

Claims priority, application France, Jun. 22, 1979, 79 16083; Dec. 18, 1979, 79 30954

Int. Cl.³ H01L 21/225

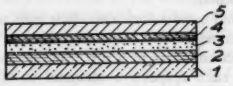
U.S. Cl. 29—571 5 Claims

1. In a process for making thin film transistors on an amorphous substrate, the steps;

(A) in a first phase: of introducing the substrate in a deposition chamber, making on all this substrate, without contact with the outside atmosphere, a uniform deposit of four successive primary layers; a first layer of protective insulating material, a second layer of semiconductor material, a third layer of insulating material, of smaller thickness than the first layer, and finally a fourth layer of a metal,

(B) and, in a second phase,

of withdrawing the substrate coated with these four layers from the deposition chamber, by a first photoetching operation through a first mask, two openings for each transistor are opened through the fourth layer of metal and the third layer of insulator, the metal part remaining



between these two openings constituting the grid of the transistor, and

a layer of diffusing metal is deposited on the whole of the substrate, then, by selective chemical attack, this second metal is eliminated, this leaving, in the semiconductor, two conducting zones, one constituting the drain and the other the source of the transistor.

4,343,082

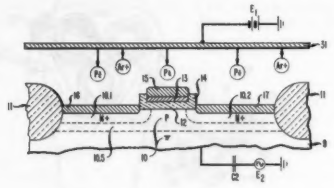
METHOD OF MAKING CONTACT ELECTRODES TO SILICON GATE, AND SOURCE AND DRAIN REGIONS, OF A SEMICONDUCTOR DEVICE

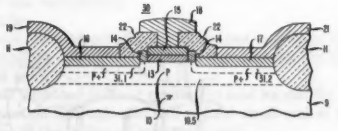
Martin P. Lepselter, Summit, and Simon M. Sze, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1980, Ser. No. 141,120

Int. Cl.³ C23F *1/02;* **B01J** *17/00;* **B05D** *5/12;* **C23C** *11/08*

U.S. Cl. 29—576 B **10 Claims**





1. A method for making transistor devices in a silicon semiconductor body (**10**), each said device (**20** or **30**, FIG. **6** or FIG. **7**) having a gate electrode layer contact (**15**) to a polycrystalline silicon gate electrode (**13**) during a stage of manufacture of said device, a source electrode layer contact (**16**), and a drain electrode layer contact (**17**), including the steps of coating side edges of said polysilicon gate electrode (**13**) with a silicon dioxide layer (**14**), and forming said gate and source and drain electrode contacts simultaneously by depositing on said body (**10**) a transisition metal capable of forming a silicide to form silicide of said metal contacting a pair of then exposed regions (**10.1**, **10.2**) contiguous with a major surface of the body (**10**), thereby to form said source and drain electrode contacts (**16**, **17**), and simultaneously to form said silicide contacting the then exposed regions of the polycrystalline silicon gate electrode (**13**), thereby to form said gate electrode contact (**15**), whereby essentially no silicide accumulates on the silicon dioxide coating (**14**).

4,343,083

METHOD OF MANUFACTURING FLEXIBLE PRINTED CIRCUIT SHEETS

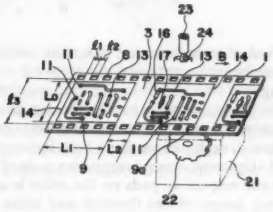
Katsuyoshi Takemura; Masatoshi Kondo, both of Hirakata; Fumio Hasuike, Kadoma, and Yoshifumi Okada, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Oct. 11, 1979, Ser. No. 83,932

Claims priority, application Japan, Oct. 11, 1978, 53-125340; Oct. 11, 1978, 53-125341

Int. Cl.³ H05K *3/30*

U.S. Cl. 29—832 **3 Claims**



1. A method of manufacturing a flexible printed circuit sheet for use in electrical and electronic equipment, which comprises the steps of:

providing a flexible base sheet having a belt-like configuration and a flexible base material with a layer of electrically conductive material covering the entire surface of at least one side of said flexible base material and having rows of guide holes at predetermined intervals along the opposite longitudinal edges of said base sheet;

forming electrically conductive circuit patterns on said base sheet at predetermined intervals in the longitudinal direction and at positions between the rows of said guide holes, the forming steps for each circuit pattern comprising selectively removing electrically conductive material within an area on said base sheet to leave a circuit pattern within said area, said area having a periphery within which said area lies, said forming step further comprising leaving electrically conductive material around said area with a conductive material edge thereof lying along the periphery of said area, the electrically conductive material which is left on said base sheet after the forming steps for a succession of circuit patterns lying outwardly of the peripheries of said areas and extending between said areas and to the base sheet edges and around said guide holes and said circuit patterns being spaced inwardly from said conductive material edges;

moving said flexible base sheet and positioning the circuit patterns successively at a parts attaching position by engagement of moving and positioning means in said guide holes and connecting electronic parts to the individual circuit patterns successively positioned at said parts attaching position; and

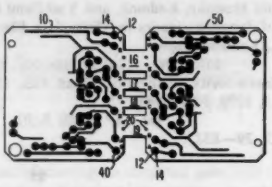
thereafter moving said base sheet for positioning the successive circuit patterns in a cutting position and cutting individual flexible printed circuit sheets from said base sheet by cutting said flexible base sheet along and adajacent the conductive material edge defining the periphery of each area and between said conductive material edge and the circuit pattern within that area.

4,343,084

METHOD FOR MAKING PRINTED CIRCUIT BOARDS WITH CONNECTOR TERMINALS

Paul C. Wilmarth, Nobelesville, Ind., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 115,361, Feb. 8, 1980, abandoned. This application Apr. 15, 1981, Ser. No. 254,536
Int. Cl.³ H05K *3/00*
U.S. Cl. 29—843 6 Claims



1. A method of manufacturing mounting terminals for two printed circuit boards comprising the steps of:

(a) aligning said two boards in a spaced apart relationship in the same plane, wherein each opposing edge contains a row of metallic pads located near the edge on the surface of the board, each pad having a hole for receiving a wire, and said alignment causing respective pads of one board to be opposite respective pads on the other board;

(b) inserting jumper wires through said holes in said pads from the sides of said boards opposite said pad side so as to connect opposing pads;

(c) soldering said jumper wires to said pads; and

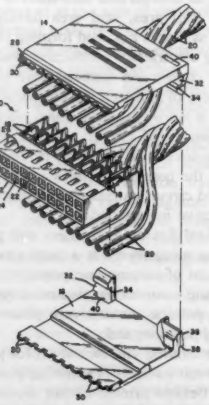
(d) cutting said jumper wires at locations intermediate said spaced apart boards to form a row of wire terminals extending beyond said opposing edges of each of said printed circuit boards.

4,343,085

CONNECTOR ASSEMBLY FOR MASS TERMINATION

John E. Lucius, Etters, and Leon T. Ritchie, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 53,150, Jun. 28, 1979, Pat. No. 4,243,288. This application Aug. 18, 1980, Ser. No. 179,375
Int. Cl.³ H01R *43/04*
U.S. Cl. 29—866 3 Claims



1. A method of mass terminating a plurality of conductors comprising the steps of:

providing a housing with a plurality of parallel spaced terminal passages opening at a front end on a mating face and at a rear end on the side of the housing in the form of outwardly directed channels;

pre-loading a terminal in each said passageway with each said terminal having a forward mating portion directed towards said mating face and a rear conductor terminating portion including at least one outwardly directed insulation displacing slot and a pair of crimp ears disposed in said channel;

aligning said conductors with their axes parallel to those of said terminals;

applying conductors in a direction normal to said axes to engage each respective terminal to effect an insulation displacing termination thereof while substantially simultaneously crimping said crimp ears against said conductor; and

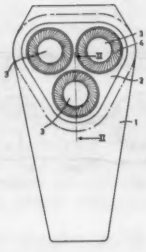
enclosing the exposed rear side portion of each terminal and the rear end of said housing with a pair of hermaphroditic cover members by inserting one end portion of each said cover members into said passageways of said housing and rotating said cover members until their opposite ends are interengaging.

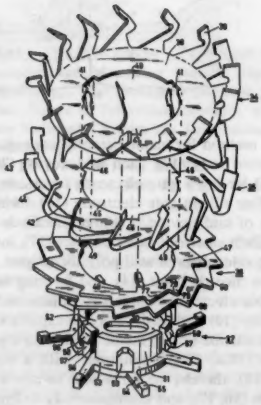
4,343,086

SHAVING APPARATUS

Jochem J. de Vries, and Ferdinand M. Trees, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1980, Ser. No. 146,553
Claims priority, application Netherlands, May 23, 1979, 7904042
Int. Cl.³ B26B *19/14*
U.S. Cl. 30—43.6 1 Claim





1. A shaving apparatus having a circular shear plate pro-

vided with hair-entrance apertures and a cutting unit associated with and rotatable relative to the shear plate; said cutting unit comprising a cutting member having a circular central body provided with a central opening, a hair-pulling member having a circular central portion provided with a central opening, cutters extending from the circumference of said central body toward the shear plate, hair-pulling elements respectively associated with and movable relative to the cutters, each hair-pulling element, with reference to the direction of rotation of the cutting unit, being positioned in front of its associated cutter, respective connecting arms extending from the hair-pulling elements to the central portion of the hair-pulling member, an annular cover plate positioned over the inner ends of said connecting arms and engaging said central portion, and means formed on said cover plate for extending through the central openings and engaging the cutting member to secure the hair-pulling member between said cutting member and the cover plate, the outer peripheral portion of the cover plate being axially offset from its inner peripheral portion to provide a flange constituting a stop limiting the movement of each hair-pulling element, said outer peripheral portion and said inner peripheral portion of the cover plate being connected by a continuous annulus, the radial dimensions of the two peripheral portions being such that the annulus is positioned with respect to the inner ends of the connecting arms to prevent accumulation of hair clippings and other particles between said inner ends of the connecting arms and the cutting member.

4,343,087

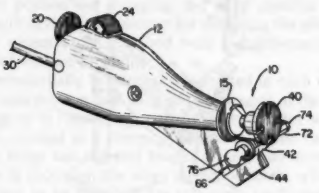
PATTERN CUTTING APPARATUS

Wayne E. Simon, P.O. Box 125, Evergreen, Colo. 80451

Filed Jan. 22, 1981, Ser. No. 227,513

Int. Cl.³ B26B *15/00*

U.S. Cl. 30—241 **14 Claims**



1. Cutting apparatus adapted for cutting patterns in paper and the like, comprising:

a handle;

an anvil member provided with at least one open slot on its periphery extending in a direction toward the center of said anvil;

a blade mounted in fixed relation to said handle for forward extension through said slot in said anvil and at an angle toward the center of said anvil; and

drive means in said handle for reciprocating said anvil along an axis through the center of said anvil.

4,343,088

PRECISION TRIMMING DEVICE

Dewey R. Farley, Richmond, and Vernon K. Holden, Sandston, both of Va., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,655

Int. Cl.³ B26B *25/00*; B24B *17/00*; B26D *5/08*

U.S. Cl. 30—273 **11 Claims**

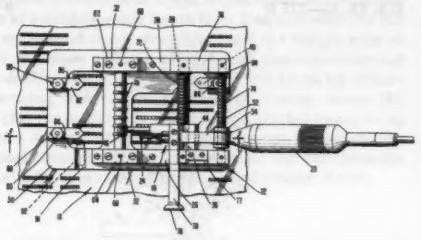
1. A precision trimming device comprising:

a frame having a base positionable on a surface of an article;

means mounted on said frame for trimming the surface of the article;

means mounted on the frame for mounting the trimming means for movement in a first direction adjacent to the surface to be trimmed and simultaneously in a second direction perpendicular to the first direction into trimming engagement with a preselected portion of the surface;

means mounted on the frame for locating the frame relative to the article so as to locate the trimming means in alignment with a preselected portion of the article to be trimmed;



first means for moving said trimming means in said first direction; and

second means, responsive to movement of the trimming means in said first direction, for moving said trimming means in the second direction such that the trimming means trims the preselected portion of the surface of the article.

4,343,089

OUTER BLADE OF ELECTRIC SHAVERS

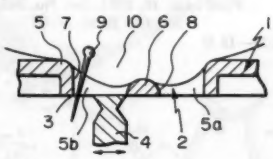
Tadashi Suzuki, Yuzawa, and Sinichiro Tugimura, Nagahama, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 29, 1980, Ser. No. 191,755

Claims priority, application Japan, Oct. 3, 1979, 54-127756; Oct. 3, 1979, 54-127757

Int. Cl.³ B26B *19/02*

U.S. Cl. 30—346.51 **1 Claim**



1. An outer blade for electric shavers made of a metal foil and comprising an outer surface which slides against the user's skin and an inner surface against which an inner blade may slide, said outer blade including hair inlet apertures each having an undulated peripheral sidewall, said sidewall including a plurality of portions oriented generally concave relative to the center of said aperture as viewed in a direction perpendicular to the plane of said outer blade, and a plurality of portions oriented relatively convex relative to said center as viewed in said direction, each said sidewall portion having an angle of inclination comprising the angle which the respective sidewall portion makes with said inner surface, the angle of inclination of said generally concave portions being larger than that of said generally convex portions, said sidewall portions arranged such that said apertures are larger at said outer surface than at said inner surface.

4,343,090

SUSPENSION DEVICE FOR ANGLE INDICATOR

Lars A. Bergkvist, Vastmansvagen 16, 890 23 Sjalevad, Sweden

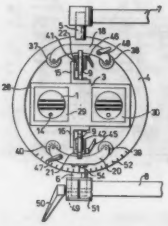
PCT No. PCT/SE79/00243, § 371 Date Aug. 1, 1980, § 102(e) Date Jul. 21, 1980, PCT Pub. No. WO80/01202, PCT Pub. Date Jun. 12, 1980

PCT Filed Nov. 30, 1979, Ser. No. 200,494

Claims priority, application Sweden, Dec. 1, 1978, 7812389

Int. Cl.[3] G01C *1/00*

U.S. Cl. 33—275 R 9 Claims



1. A suspension device for use in combination with an angle indicator (3) intended to indicate the angle of an object relative to the vertical line and comprising two angle-indicating devices (1,2), each designed to indicate a predetermined angle to the vertical line, and located in two planes perpendicular to each other, characterized in the suspension device comprises an outer ring (4), support means enabling rotation of said outer ring about a diameter of said outer ring including axle means on the periphery, and having an axis including a diameter, of said outer ring, said support means adapted to be secured to the object whose angle is to be indicated, an inner ring (9) located perpendicularly to and inside of the outer ring (4) and movable along said outer ring (4), and attachment means (15,16) for attaching said angle indicator (3) inside of said inner ring (9), which attachment means (15,16) are movable along said inner ring (9), and that the outer ring (4) is rotatable about the axis of said axle means which is in parallel with a direction characteristic for the object, for example its longitudinal direction.

4,343,091

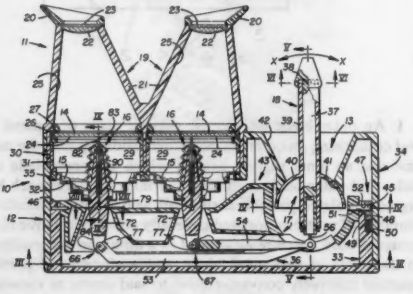
THREE-DIMENSIONAL DRAWING TOOL

Peter H. Stephens, 636 Stanyan St., San Francisco, Calif. 94117

Filed Mar. 19, 1981, Ser. No. 245,306

Int. Cl.[3] B43L *13/00*

U.S. Cl. 33—18 R 38 Claims



1. A three-dimensional drawing tool comprising a housing, first and second transparent screens mounted on said housing, each having upper and lower sides,

a powderized etching composition, normally coating the lower sides of said first and second screens,

first and second scribing means for simultaneously scribing individual designs on the etching composition coating the lower sides of said first and second screens, respectively,

operator control means for simultaneously moving and for also moving said first and second scribing means relative to each other in a preselected direction on the lower sides of said first and second screens to etch nearly identical said designs thereon, and

first and second optical viewing means in alignment respectively with said first and second screens for stereoscopically viewing the individual images resulting from said individual designs as a composite three-dimensional image.

4,343,092

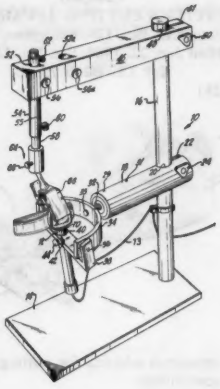
PROBE GUIDE AND HOLDER

Robert O. Wahl, Sound Beach; William D. Hay, Peekskill, and Raymond J. Prohaska, Locust Valley, all of N.Y., assignors to UPA Technology, Inc., Syosset, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,971

Int. Cl.[3] G01B *7/06*

U.S. Cl. 33—169 R 5 Claims



1. A probe holder and guide for holding a non-destructive thickness measuring probe in contact with a workpiece having a coated substrate comprising:

a base;

a gimbal assembly mounted on the base having means for holding the probe such that the probe may swivel freely about a point located at the geometric center of a face of a probe head of the probe;

a workpiece clamp means, supported on the base, for holding the workpiece;

means for positioning the workpiece clamp means to forceably move the workpiece into abutting relation with the face of the probe head to cause the probe to swivel until the resultant vector through the center of moment of the static forces through the workpiece acting on the probe head at the point or points of contact between the workpiece surface and the face of the probe head passes through the geometric center of the probe head face;

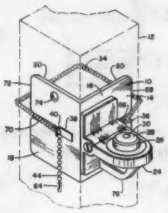
means for securing the workpiece clamp means after the workpiece clamp means is positioned to secure the relation between the workpiece and the probe head during a measurement period.

4,343,093

PLUMB TOOL

Richard L. Eadens, 204 Magnolia Ave., Jeffersonville, Ind. 47130

Filed Feb. 23, 1981, Ser. No. 237,345
Int. Cl.[3] G01C *9/28, 9/36*
U.S. Cl. 33—373 4 Claims



1. A plumb tool that is adapted to be mounted to the object that is being plumbed, said tool comprising:

a. a body member of a substantially rigid material having a pair of right-angular arm portions, each arm having a substantially flat inner surface for use in engaging an object that is to be plumbed;

b. a ledge projecting outwardly from one arm portion and supporting an orbital bubble level on the top surface thereof in a substantially horizontal position, said ledge being being located adjacent the vertical corner formed by the joining of the two arm portions and

c. a flexible elongated strap member attached at one end to the ledge and being adapted to encircle an object that is to be plumbed, and keeper means on the exterior of the other arm portion for engaging the strap member along the length of the strap member for mounting the plumb tool to the object to be plumbed with a quick-attachment and quick-release capability;

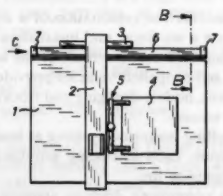
d. a substantially horizontal slot formed in each right-angular arm portion, and each slot being open at the outermost edge of its related arm portion, and each slot being generally located in a common horizontal plane that includes the ledge and the said keeper means, said slots being for use in receiving the strap member therein whenever the object to be plumbed has relatively small transverse dimensions that are smaller than the width of the arm portions.

4,343,094

DRAFTING APPARATUS

Lorenzo Ubezio, Dietikon, Switzerland, assignor to Reppisch-Werke AG, Dietikon, Switzerland

Filed Mar. 31, 1980, Ser. No. 135,541
Claims priority, application Switzerland, Apr. 3, 1979, 3076/79
Int. Cl.[3] B43L *13/04, 7/00, 9/04*
U.S. Cl. 33—430 6 Claims



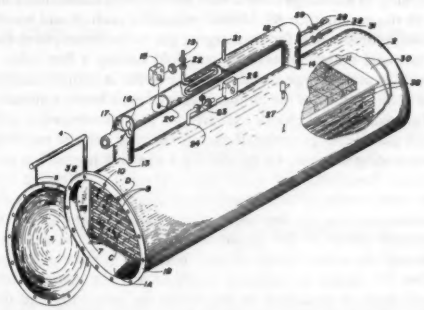
1. A drafting apparatus for attachment to a drafting board, comprising rail means (6) having an upper edge (10) forming an abutment surface for a T-square, at least a portion of said rail means (6) being made of ferromagnetic material for magnetically holding a T-square, said rail means (6) further comprising a flat surface (22) for resting flat on a work surface, first means (8, 9, 12) for removably securing said rail means (6) to an edge of a drafting board, trammel head means (7), second means (13, 15, 24) for operatively securing said trammel head means to said rail means, and compass means (16, 19) operatively secured to said trammel head means, whereby said rail means are useable as a holding guide means for a T-square when the rail means are secured to a drafting board and as a straight edge or ruler or as a beam compass when the rail means are removed from a drafting board, and wherein said first means for removably securing said rail means comprise bracket means (8), means (11) for operatively securing said bracket means to an edge of a drafting board, and magnet means (9) operatively interposed between said bracket means and said rail means for removably holding said rail means to said bracket means.

4,343,095

PRESSURE DRYER FOR STEAM SEASONING LUMBER

Howard N. Rosen; Robert E. Bodkin, both of Carbondale, and Kenneth D. Gaddis, Johnston City, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 24, 1981, Ser. No. 246,971
Int. Cl.[3] F26B *5/04, 13/30*
U.S. Cl. 34—16.5 10 Claims



5. A process for accelerated drying of lumber at pressures above atmospheric pressure to rapidly remove moisture from the wood in a generally cylindrical kiln defining a chamber to contain boards having a bypass line with an inlet and outlet communicating with the chamber, heater means to heat gas within the bypass line and blower means to move gas through the bypass line including;

a. loading the boards in the kiln in generally parallel spaced relation;

b. evacuating air from the chamber to a selected absolute pressure within the chamber whereby water vapor is emitted from the wood; and

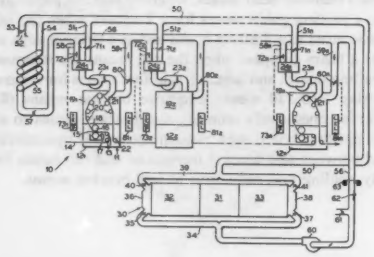
c. circulating the water vapor, as steam through said bypass line and heating said steam to a selected temperature above 212° F. to provide a selected steam pressure in said chamber to heat said lumber and vaporize water therefrom to provide dried lumber of selected moisture content.

4,343,096

SYSTEM FOR CONTROLLING EMISSIONS OF A SOLVENT FROM A PRINTING PRESS

Paul W. Bergland, Montville, N.J., assignor to Bobst Champlain, Inc., Roseland, N.J.

Filed Nov. 25, 1980, Ser. No. 210,277
Int. Cl.[3] F26B *21/10*
U.S. Cl. 34—47 5 Claims



1. A system for controlling emissions of a solvent from a printing press having a plurality of printing stations, said system including a separate drying hood for each of said printing stations, each of said drying hoods having means for moving a web of material through the hood, nozzle means for directing a flow of drying gases onto the moving web of material in the hood, blower means having a gas inlet for creating a flow of gas through said nozzle means, and a gas discharge outlet from said hood; means for removing solvents from a flow of gas, said means having inlet means for receiving a flow of gas containing solvents and outlet means for discharging said gas substantially free of said solvents; an output manifold having a first inlet connected to the outlet means, said manifold having a plurality of discharge outlets with one outlet in communication with the gas inlet for the blower means for each of said hoods, an adjustable outlet for discharging gas to the atmosphere and a terminal outlet; an exhaust manifold having a first inlet, a plurality of discharge outlets with one outlet in communication with the gas inlet of the blower means of each hood, a plurality of exhaust inlets with one exhaust inlet in communication with each gas discharge outlet of each hood, said exhaust manifold terminating in means for producing a negative pressure in said exhaust manifold, said means for producing discharging into the inlet means of said means for removing; and means for interconnecting the first inlet of one exhaust manifold to the terminal outlet of the output manifold so that the gas flow through the nozzle means of each hood is a mixture of the gas from the output and exhaust manifold and the exhaust from each hood is processed in the means for removing and discharged into the output manifold for recirculation through the system.

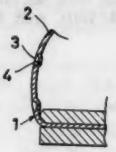
4,343,097

SHOES

Kyozo Sasaki, Hyogo, Japan, assignor to Sasaki Co., Ltd., Osaka, Japan

Filed Aug. 8, 1980, Ser. No. 176,632
Claims priority, application Japan, Aug. 27, 1979, 54-118064[U]
Int. Cl.[3] A43B *7/06*
U.S. Cl. 36—3 A 2 Claims

1. A shoe having an upper, said upper having a plurality of hollow depressions in one of the surfaces thereof, each of said depressions having an air hole therein extending through the thickness of the material of the upper, the material of the upper between the surface of each of the hollow depressions and the



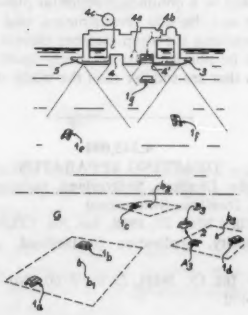
opposite surface of the upper being denser and harder than the remainder of the material of the upper.

4,343,098

APPARATUS FOR MINING NODULES BENEATH THE SEA

Pierre Balligand, Sceaux; Yves Corfa, Nantes; Pierre Lemercier, Grenoble; Paul Marchal, Gif-sur/Yvette, and Jean Vertut, Issy les Moulineau, all of France, assignors to Commissariate a l'Energie Atomique, France

Division of Ser. No. 869,148, Jan. 23, 1978, Pat. No. 4,231,171.
This application Mar. 10, 1980, Ser. No. 129,125
Claims priority, application France, Jan. 18, 1977, 77 01288
Int. Cl.[3] E02F *3/88*
U.S. Cl. 37—54 22 Claims



1. An installation for the exploitation of a deposit of polymetallic nodules on a sea floor, said installation comprising,

(a) a platform positioned at the surface of the sea,

(b) a plurality of self-propelled vehicles provided with releasable ballast means, nodule dredging and stocking means, and self-propelling means,

(c) said self-propelling means comprising at least two support units of revolusion, each unit being provided with at least one helical propulsion fin,

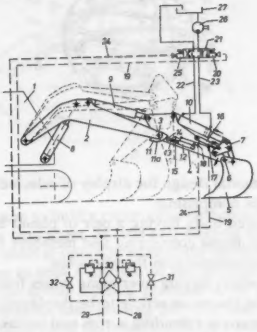
(d) said platform comprising docking stations to which are connected means for unloading nodules and means for loading the vehicles with ballast, and stocking means designated for receiving discharged nodules.

4,343,099

APPARATUS FOR THE PARALLEL GUIDANCE OF THE BUCKET OF A HYDRAULIC EXCAVATOR

Mario Ziegler, and Ulrich Ziegler, both of Frenkendorf, Switzerland, assignors to Ziegler AG, Liestal, Switzerland

Filed Nov. 21, 1980, Ser. No. 209,206
Claims priority, application Switzerland, Nov. 28, 1979, 10563/79
Int. Cl.³ E02F 5/02
U.S. Cl. 37—103 8 Claims



1. A hydraulic dredger/excavator of the type having an excavator frame, a boom swivellably journalled at the excavator frame and a first hydraulic cylinder therebetween, a dipper boom pivotally connected to the boom and a second hydraulic cylinder therebetween, a bucket pivotally connected to the end of the pivotable dipper boom and a third hydraulic cylinder therebetween, and having a control device for forcedly changing the angular position of the bucket with respect to the dipper boom and the angular position of the boom with respect to the excavator frame in dependence on manually controlling the hydraulic cylinder for varying the angle between the boom and the dipper boom, in order to move the bucket so as to maintain a position parallel to itself, the control device comprising cam means having control surface means, the cam means lying adjacent the axis of rotation of the dipper boom relative to the boom, and control means for effecting a follow-up control working with comparison of index value and actual value and acting on the hydraulic cylinder for varying the angle between the dipper boom and the bucket and on the hydraulic cylinder for varying the angle between the boom and the excavator frame, the control means having means for mechanically scanning the control surface means of the cam means, which at any point corresponds to the value of said angular position respectively, at which the bucket moves along a path so as to maintain a position parallel to itself.

4,343,100

FLOOR SUPPORT FOR MOBILE SCRAPER

Lyle E. York, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

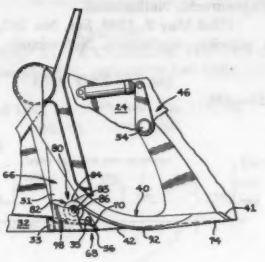
PCT No. PCT/US80/00245, § 371 Date Mar. 10, 1980, § 102(e) Date Mar. 10, 1980, PCT Pub. No. WO81/02598, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 10, 1980, Ser. No. 173,929
Int. Cl.³ E02F 9/28
U.S. Cl. 37—126 AE 5 Claims

1. A mobile scraper (10), comprising:

a frame (32);

a bowl (26) connected to said frame (32), said bowl (26) having a bottom opening (30), a floor (40) and a pivoting apparatus (46) connecting said floor (40) to said bowl (26), said floor (40) being movable between a closed position at which said floor (40) closes said bottom opening (30) and an open position at which said floor (40) opens said bottom opening (30), said floor having a striking edge (41) being at a location below said frame (32) at the open position of said floor (40);

first means (68) for stopping said floor (40) at the open position and for supporting said floor (40) at a location adja-



cent said striking edge (41) and in a substantially horizontal direction; and,

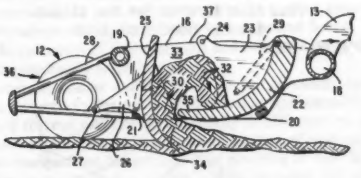
second means (80) for substantially vertically supporting said floor (40) on said frame (32) in the open position, the closed position and during movement therebetween.

4,343,101

SCRAPER BOWL STRUCTURE

William H. Klekamp, Decatur, and Philip H. Tullis, Taylorville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01196, § 371 Date Sep. 12, 1980, § 102(e) Date Sep. 12, 1980, PCT Pub. No. WO82/01021, PCT Pub. Date Apr. 1, 1982
PCT Filed Sep. 12, 1980, Ser. No. 250,747
Int. Cl.³ E02F 3/64
U.S. Cl. 37—129 10 Claims



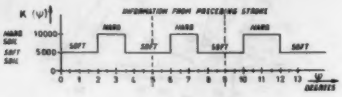
1. In a scraper bowl structure (11) of the type having a pair of upright sidewalls (16,17), frame means (36) for supporting and maintaining the sidewalls (16,17) in a substantially fixed elevational relationship to the earth, and a concave apron (22,23) pivotally connected to the sidewalls (16,17) and being swingable between raised and lowered positions therebetween, the improvement comprising

a concave blade (25,26) pivotally connected to the frame means (36) and being swingable between raised and lowered positions between the sidewalls, the blade (25,26) being of a construction sufficient for bulldozing earth forwardly onto the apron (22,23) in the lowered position of the blade (25,26) and apron (22,23), said apron defining a lower rear edge and said blade defining a lower front edge, said edges extending generally horizontally and overlapping in the lowered position of the apron and blade, and said blade including a sideless bulldozer blade portion (25) and a pair of rearwardly extending arms (26), the arms being pivotally connected to the frame means (36).

4,343,102
METHOD FOR CONTROLLING THE OPERATION OF A DREDGING APPARATUS

Christiaan A. Cornelis, Papendrecht, and Cornelis De Keizer, Dordrecht, both of Netherlands, assignors to IHC Holland N.V., Papendrecht, Netherlands

Filed May 8, 1980, Ser. No. 147,758
Claims priority, application Netherlands, May 10, 1979, 7903679
Int. Cl.³ E02F 3/88
U.S. Cl. 37—195 5 Claims



1. A method for controlling the operation of a dredging apparatus provided with a cutting tool adapted to perform working strokes on submarine soil, comprising performing a first said working stroke, measuring a parameter of the operation of the dredging apparatus during said first working stroke, recording said measured parameter as a function of the distance covered by the cutting tool during said working stroke, and regulating the hauling speed according to said recorded function during only a second working stroke that immediately follows said first working stroke.

4,343,103
FABRIC STRETCHER

Kumiko Murashima, P.O. Box 515, Williamstown, N.J. 08094

Filed Mar. 24, 1980, Ser. No. 132,826
Int. Cl.³ D06C 3/00, 3/08
U.S. Cl. 38—102 4 Claims

1. A fabric stretcher comprising:
a pair of end clamp means adapted to hold the two ends of a length of fabric, each of said clamp means including a cylindrically-shaped member and an elongated semicylindrically-shaped cover therefor;
means for securing a rope means to each end of each of said clamp means for suspending the same from a fixed support, and
a plurality of elongated substantially rigid rod-shaped members having a length substantially equal to the length of each of said clamp means, each of said rod-shaped members including a pin extending axially from each end thereof, said rod-shaped members being capable of being flexed and being adapted to transversely stretch fabric being longitudinally stretched by said clamp means.

4,343,104
DISPLAY OF ARTICLES

Andrea Szabo, 1626 Wentwood Dr., Pasadena, Tex. 77504

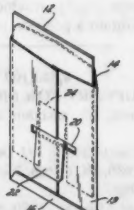
Filed Jul. 22, 1981, Ser. No. 285,796
Int. Cl.³ G09F 3/18
U.S. Cl. 40—10 R 9 Claims

1. An ornamental design for display of selected articles such as photographs comprising:
(a) a bifurcated body having a pair of planar base members and hinge means connecting said members together for a pivotal interconnection therebetween;
(b) said members having overlaying edges forming a recess adapted to secure an article to be displayed;
(c) a filigree cover extending across said recess from edge to edge on said base members;
(d) said cover integrally carried by one of said members at said overlaying edge thereon; and
(e) said cover releasably secured to the other of said base members at said overlaying edge thereon, whereby said cover is released from said overlaying edge and said base members pivoted rearwardly from said cover to permit the article to be displayed, to be inserted or removed from the recess in said members.

4,343,105
ENVELOPE-DISPLAY DEVICE AND METHOD

Robert Isaacson, Far Rockaway, N.Y., assignor to Connecticut Valley Paper & Envelope Co., Inc., New York, N.Y.

Filed Feb. 7, 1980, Ser. No. 119,424
Int. Cl.³ A47G 1/06; G09F 1/12
U.S. Cl. 40—155 13 Claims



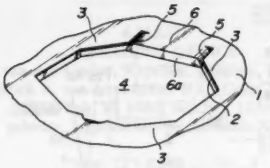
1. A display device comprising an envelope consisting substantially entirely of relatively thin, flexible sheet material and having a substantially planar front sheet, a substantially planar rear sheet, said front and rear sheets being joined together along selected edges to form said envelope, an opening in said rear sheet, a relatively stiff planar member in the envelope, said member having a tongue extending outwardly through said opening to serve as a prop for the envelope.

4,343,106

THIN-PIECE HOLDING STRUCTURE AND A SLIDE FILING SHEET USING THAT STRUCTURE

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Filed Dec. 2, 1980, Ser. No. 212,339
Claims priority, application Japan, Jun. 2, 1980, 55-72675
Int. Cl.³ A47G *1/06*; G09F *1/10*; B42F *5/00*
U.S. Cl. 40—158 B **11 Claims**



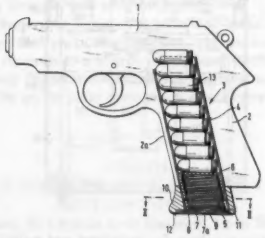
1. A structure to hold a rectangular thin-piece in an aperture comprising a base sheet, at least two holding portions formed on said base sheet at opposite sides of the aperture, a thin-piece seat covering at least a portion of the aperture and being recessed relative to the holding portions so as to receive said thin-piece between said holding portions and said seat, said holding portions being defined by slits separating said holding portions from said thin-piece seat, a push-in area formed on said base sheet and having a portion thereof contiguous to said seat, said push-in area being defined by slits extending from the aperture that are adjacent to both said seat and at least one of said holding portions, and an abutting member formed on that part of said push-in area which is contiguous to said seat, said push-in area being so dimensioned that one edge of the thin-piece is adapted to be once pushed in between said push-in area and said holding portion adjacent thereto to an extent sufficient for clearing the thin-piece from said holding portion located at the opposite side of the aperture, wherein said thin-piece is movable back from said push-in area onto the seat where said abutting member abuts one edge of the thin-piece to keep the thin-piece in position.

4,343,107

CARTRIDGE MAGAZINE FOR PISTOLS

Benno Kaltenegger, Condominio Eden Roc II, Campione b. Lugano, Italy

Filed Apr. 30, 1980, Ser. No. 145,387
Claims priority, application Switzerland, May 7, 1979, 4250/79
Int. Cl.³ F41C *25/00*
U.S. Cl. 42—7 **3 Claims**



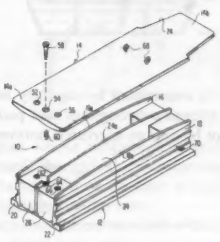
1. In a cartridge magazine for pistols of the type including an elongated magazine sleeve adapted to receive cartridges therein, upper and lower abutment plates housing therebetween a spring, a slide plate for retaining the magazine sleeve operatively associated within a pistol handle, and a finger support at a lower end of the magazine sleeve having a forwardly directed bead-shaped extension, the improvement comprising a lower edge of the magazine sleeve and a lower edge of the bead-shaped extension lying in generally contiguous planes, and said slide plate lying in the plane of said bead-shaped extension lower edge.

4,343,108

DOUBLE DEEP TONE GOBBLER TURKEY CALL

Ben R. Lee, Coffeeville, Ala., assignor to Lee Calls, Inc., Coffeeville, Ala.

Filed Dec. 12, 1980, Ser. No. 215,784
Int. Cl.³ A63H *5/00*
U.S. Cl. 46—189 **3 Claims**



1. A highly versatile, double deep tone gobbler turkey call comprising a generally rectangular, elongated upwardly open wooden box assembly, said box assembly comprising:

a longitudinally extending bottom wall,

laterally spaced generally vertical sidewalls fixed at their lower ends to said bottom wall at opposite sides thereof,

a vertical sound board sized and configured to said sidewalls and being fixed to and rising vertically from said bottom wall at the center thereof,

end blocks positioned between said sound board, on both sides thereof, and respective sidewalls, at opposite ends of said box assembly, and being fixedly mounted therebetween and to said bottom wall to form dual tone sound chambers on respective sides of said sound board,

the upper edges of said sidewalls and said sound board being longitudinally slightly convex,

a generally planar wooden actuator top pivotably mounted at one end to the top of said wooden box assembly at an end thereof and having a laterally double convex bottom wall in contact with said convex edges of said sidewalls and said sound board such that pivoting of said actuator top causes lateral scraping of said actuator top simultaneously across the edges of both of said sidewalls and said sound board to imitate the double deep tone of an old tom turkey gobble.

4,343,109

CAPILLARY DISC AND SUPPORT THEREFOR

Reinhold Holtkamp, Werther Strasse 112, 4294 Isselburg, Fed. Rep. of Germany

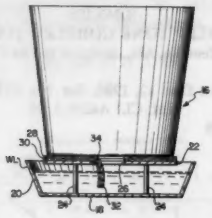
Filed Nov. 12, 1980, Ser. No. 205,989
Int. Cl.³ A01G *27/00*
U.S. Cl. 47—81 **5 Claims**

1. A plant watering device comprising:

(a) support means adapted to rest on the bottom of a tray or like water-containing vessel, said support means including a support disc and a plurality of legs extending downwardly from said disc and spaced inwardly from the edge thereof so as to elevate said disc from the bottom of the tray, said disc being formed with a substantially central opening therein, and

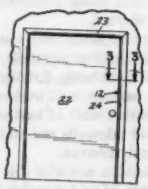
(b) pad means constructed of water absorbent material positioned on said disc, said pad means having a movable tab

hinged at one end thereof to said pad means and aligned with and commensurate in size with said opening in said disc, said tab being adapted to be bent downwardly through said opening in said disc for submergence in the water in the tray,



whereby water is transmitted by capillary action from said tab to and uniformly throughout said pad for providing water to a pot having an apertured bottom positioned on said pad.

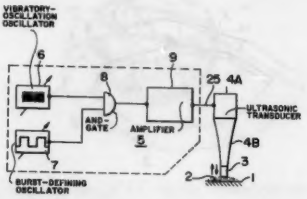
4,343,110
WEATHER STRIPPING APPARATUS
Eileen Thompson, Rte. 1, Barnesville, Minn. 56514
Filed Jan. 21, 1980, Ser. No. 113,448
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—477 **1 Claim**



1. A weather stripping apparatus used to inhibit the flow of air between doors or windows and adjoining surfaces, said weather stripping apparatus comprising:

an elongated planar flexible member defined by two side edges extending in a longitudinal direction and two ends, said member being folded along its longitudinal direction and the side edges being joined to form a front edge, the side edges being affixed to one another along the front edge in a non-continuous manner such that the side edges define a plurality of openings along the front edge of said flexible member, said flexible member having a hollow tubular shape which is generally flat defined by the front edge, a back edge, two side portions, and two opposite end portions, said openings along said front edge being adapted to face outwardly from a structure toward the direction of the flow of air whereby air can enter the hollow interior of said tubular shaped flexible member to inflate said tubular member and seal gaps between doors or windows and adjoining surfaces of said structure, thereby preventing unwanted air from flowing into the structure, said flexible member including a length of removable string, said string being disposed within said flexible member along its full length and operable to cause the side portions of said flexible member to be separated.

4,343,111
ULTRASONIC MACHINING METHOD AND APPARATUS
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan
Filed Jan. 23, 1980, Ser. No. 114,557
Claims priority, application Japan, Jan. 24, 1979, 54/6107
Int. Cl.³ B24B *1/04*
U.S. Cl. 51—59 SS **6 Claims**

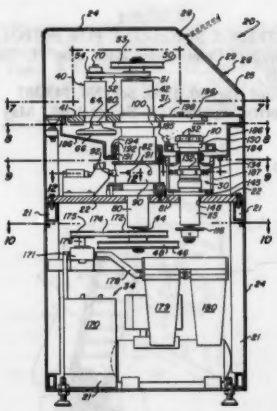


1. In an ultrasonic machining method wherein an ultrasonically vibrating tool is disposed in a machining relationship with a workpiece and juxtaposed with the workpiece across a cutting front to mechanically machine the workpiece by means of vibratory energy transmitted from the tool to the cutting front, the improvement which comprises the steps of:

(a) modifying said vibratory energy by intermittently interrupting the vibratory oscillations applied to said tool, thereby applying a series of time-spaced bursts of vibratory oscillations to said cutting front; and

(b) modifying the frequency of said vibratory oscillations during each of said bursts.

4,343,112
APPARATUS FOR GRINDING METALLOGRAPHIC SPECIMENS
Tracy C. Jarrett, P.O. Box 15397, Denver, Colo. 80215
Filed Aug. 8, 1980, Ser. No. 176,510
Int. Cl.³ B24B *7/04*
U.S. Cl. 51—131.3 **8 Claims**



1. A grinding machine for grinding and polishing metallographic specimens, comprising, in combination, a rigid frame and housing; a multiple-lap, indexable, vertical grinder assembly supported on said frame within said housing, means for rotating each lap of said assembly about a vertical axis, a rotating vertically positionable specimen holder assembly supported on said frame within said housing, and a coolant and grinding fluid system supported on said frame within said

housing for supplying coolant and grinding fluid to specimens supported in said specimen holder during grinding thereof, means for indexing said grinder assembly for the relative positioning of laps with respect to said specimen holder, means for rotating said specimen holder about a vertical axis and means for vertically positioning said specimen holder relative to and with a predetermined pressure against a selected lap of said grinder assembly, whereby specimens held by said holder can be ground and polished to a predetermined finish by a selected successive plurality of laps.

4,343,113

ABRADING DEVICE

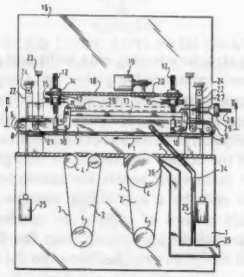
Jacob A. van der Linden, Kapellen, Belgium, assignor to Machinefabriek A. van der Linden. B.V., Goes, Netherlands

Filed Feb. 15, 1980, Ser. No. 121,826

Claims priority, application Netherlands, Mar. 30, 1979, 7902493

Int. Cl.³ B24B *21/04*

U.S. Cl. 51—137 **3 Claims**



1. An abrading device comprising, in combination:

a work support surface having abrading means protruding thereabove at a particular location;

a conveyor assembly located in spaced relation above said surface and defining a guide channel therewith whereby a workpiece is guided and conveyed through said channel, said conveyor assembly comprising a framework, roller means supported by said framework, an endless conveyor belt trained over said roller means to present upper and lower flights in which the lower flight is essentially parallel with said work support surface, means for driving said roller means, and a guide plate overlying said lower flight whereby a workpiece forces said lower flight upwardly against said guide plate, said guide plate having a flat and smooth undersurface in that portion thereof registered above said particular location whereat said abrading means is located, and said undersurface of the guide plate having transverse recesses at locations other than in registry above said particular location, and means for subjecting said recesses to a source of negative pressure whereby said lower flight is maintained up against said undersurface of the guide plate even when a workpiece does not so force it.

4,343,114

APPARATUS FOR MACHINING CAMS AT A CONSTANT CUTTING SPEED

Marc Tourasse, 53 Chemin de la Garenne, Lyon 50, Rhône, and Roger Duvernay, 16 Allée de Longcheêne, Saint Genis Laval, Rhone, both of France

Filed Jun. 27, 1980, Ser. No. 163,721

Claims priority, application France, Jun. 29, 1979, 79 17425

Int. Cl.³ B24B *5/42*

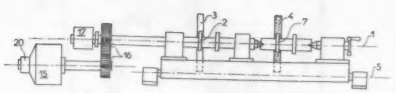
U.S. Cl. 51—165.71 **4 Claims**

1. A device for machining a cam mounted between points on a support mounted to oscillate about an axis parallel to the axis of rotation of a cam, this support also supporting a master cam co-axially with the cam, whereas motorized means insure the drive of the cam and of the master cam which cooperate respectively with a follower member and with a cutting member, characterized in that it comprises:

memory means for storing predetermined theoretical instantaneous values of the speed of the rotation of the cam that must be implemented such that the cutting speed remains the same at any point around the cam;

encoder means, coupled to the cam, for providing a first signal indicating the instantaneous angular orientation of the cam;

means, responsive to the output from the memory means and the first signal from the encoder means, for providing a



second signal whose magnitude is proportional to the predetermined theoretical instantaneous value of the speed of the rotation of the cam at each predetermined angular orientation of the cam;

means, connected to the output shaft of the motor means, for providing a third signal whose magnitude is proportional to the instantaneous speed of the motor means; and

means for varying the speed of rotation of the cam such that the cutting speed remains the same at any point around the cam;

the speed varying means including means for comparing the second and third signals and adjusting the magnitude of the voltage supply to the motor means at each instant in order to reduce to zero the difference between the magnitude of the second and third signals.

4,343,115

PROTECTING HOOD FOR A MOTOR-DRIVEN HAND TOOL

Manfred Stäbler, and Fritz Schädlich, both of Leinfelden-Echterdingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 13, 1980, Ser. No. 121,257

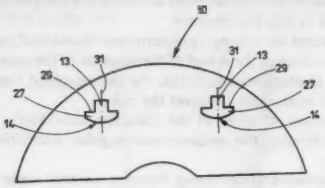
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1979, 7909078[U]

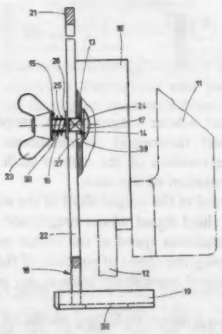
Int. Cl.³ B24B *55/04*

U.S. Cl. 51—268 **11 Claims**

1. A protecting hood assembly for use with a motor-driven hand tool, comprising a hood; at least one supporting vertical member formed with an elongated slit; and fastening means for connecting said supporting member to said hood, said fastening means including at least one bolt having a threaded projection and a head formed with a peripheral portion having a rounded outer surface, said hood including at least one opening to receive said bolt, said opening having a narrowing portion of a substantially squared cross-section and a widened portion downwardly extending from an end of said narrowing portion and having a rounded lower surface, said widened portion having a size in a horizontal direction being relatively larger than a diameter of said peripheral portion of said bolt and said opening having a size in a vertical direction being relatively smaller than said diameter of said peripheral portion so that

said head of said bolt is easily inserted into said elongated slit upon assembling and is thereafter inserted into said opening





upon rotation of said bolt about said peripheral portion, and clamped on said hood.

4,343,116

PROCESSES FOR FINISHING GLASS SURFACES

Norman A. Murphy, Liverpool; John G. Banner, Wirral; Edwin Fletcher, Ormskirk, all of England, and Arthur Brown, Clwyd, Wales, assignors to Pilkington Brothers Limited, St. Helens, England

Filed Jul. 15, 1980, Ser. No. 169,217

Claims priority, application United Kingdom, Jul. 26, 1979, 7926032

Int. Cl.³ B24B *1/00, 13/00*

U.S. Cl. 51—284 R **9 Claims**

1. In a method of finishing a surface of a glass article to a close tolerance and a substantially blemish-free state, comprising the steps of causing a polishing lap to act on the surface by relative movement while continuously supplying to the surface a treatment liquid comprising water, inert particles which exert an abrasive action while preventing direct contact between the polishing lap and the glass surface, a bifluoride which forms an at least partially insoluble silicofluoride or fluoride by reaction with the glass surface, an acid which supplies hydrogen ions in solution in the water, and a solubility suppressant which maintains the treatment liquid in such a state that the silicofluoride or fluoride separates out and continues to separate out on the glass surface, whereby the lap and inert particles remove the silicofluoride or fluoride from high portions of the surface and thereby allow further reaction and glass removal in those areas, and continuing the relative movement of the polishing lap and the supply of treatment liquid until a desired finished form of the glass surface has been achieved, the improvement which resides in continuing the relative movement of the polishing lap while stopping the supply of treatment liquid and replacing it immediately by a supply of an alkaline solution which neutralises any treatment liquid remaining on the glass surface or on the lap and which contains inert particles which continue the prevention of direct contact between the polishing lap and the glass surface, and finally washing the surface to remove the alkaline solution and any remaining neutralised treatment liquid.

4,343,117

ASSEMBLABLE STRUCTURES

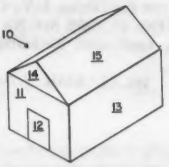
Norman S. Shemitz, Woodbridge, Conn., assignor to Shem Safe Incorporated, Milford, Conn.

Filed Apr. 11, 1980, Ser. No. 139,452

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ E04B *1/38;* A63H *33/10;* F16B *1/00*

U.S. Cl. 52—90 **37 Claims**



1. A building structure having side walls and a roof formed of separate panels connected together by a support system, each of said panels having a plurality of corners, and said support system comprising essentially non-stretchable collars mounted on said panel corners and elastic members connecting at least some of the collars together such that groups of adjacent collars on juxtaposed panels are connected together at their proximate ends by a said elastic member, and at least some of the said groups of collars are connected to other groups of collars which are spaced from the first group by tensioned elastic members stretched between the said groups of collars, such that the collars are capable of being releasably held in place on their respective panel corners to releasably hold all of the panels under the tension of the elastic members in the predetermined shape of the building structure.

4,343,118

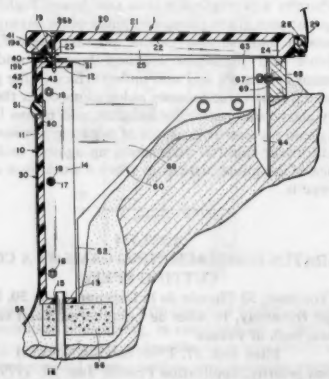
REMOVABLE SWIMMING POOL CONSTRUCTION

Jay A. Lankheet, 1320 Bayview Ave., Holland, Mich. 49423

Filed Oct. 24, 1979, Ser. No. 87,743

Int. Cl.³ E04H *3/16, 3/18*

U.S. Cl. 52—169.7 **18 Claims**



1. In a removable swimming pool construction including a plurality of side wall panels, deck panels, and a flexible liner, the improvement comprising:

a facing member connected between said side wall panels and said deck panels, and extending about an inside marginal edge of said pool construction; said facing member depending from said deck panels to a point disposed normally in the vicinity of the water line of said pool construction, and overlying an associated upper portion of said flexible liner for alleviating deterioration and damage thereto, and wherein said flexible liner includes a free edge connected with an upper portion of said side wall panels; and

said facing member is substantially L-shaped, and includes one leg thereof disposed between said deck panels and said side wall panels, with the other leg depending therefrom and overlying the upper portion of said liner.

4,343,119

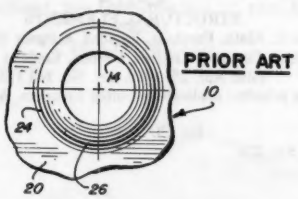
BEVELED LOBE ANTI-SKID GRATING

William A. Bahnfleth, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 89,120, Jun. 18, 1979, abandoned. This application Dec. 22, 1980, Ser. No. 218,496

Int. Cl.³ B32B *3/10*; E04C *2/42*; F16S *1/08*

U.S. Cl. 52—180 2 Claims



1. In a grating (10) for use as a deck, said grating (10) including a substantially rigid metal plate (32), and a plurality of gripping members (30) extending upwardly from the plane of said plate (32), the improvement comprising:

a base (38) for each gripping member at the junction of each gripping member with said plate (32), at least three lobes (36) extending upwardly from said base, each lobe (36) having a parabolic tongue shaped configuration and being connected to the plate (32) along a circular path at said base, each lobe (36) ascending upward and inward to form a crest (40), each crest (40) of each lobe (36) being spaced from each crest (40) of the remaining lobes (36) to form a star-shaped opening (42) therebetween, and a continuous, vertically oriented wall (41) on the edge of each lobe (36) which wall (41) is spaced from a wall (41) of each adjacent lobe (36) to define said star-shaped opening and to define extensions (43) between adjacent lobes which extend from the crest (40) of one lobe to the base (38) thereof and to the crest (40) of an adjacent lobe (36), said extensions being parabolic shaped to provide substantial openings between the lobes at the base of each gripping member, portions of said walls (41) of said star-shaped opening (42) defining said extensions (43) between adjacent lobes (36) and diverging as they extend from said base (38) to their respective crests (40), said walls being tapered inwardly and downwardly toward the center of the opening to assist in dispersing mud scraped loose by said crests (40) of the gripping members (30).

4,343,120

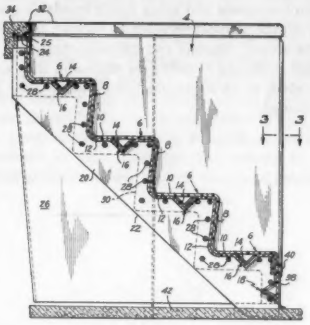
STAIR STRUCTURE FOR SWIMMING POOLS

Donald H. Witte, Arlington, Tex., assignor to Carl R. Meyer and Carol S. Meyer, both of Port Isabel, Tex.

Filed Mar. 17, 1980, Ser. No. 131,221

Int. Cl.³ E04F *11/00*

U.S. Cl. 52—184 18 Claims



1. A modular component stair structure for a swimming pool, which stair structure comprises:

(a) a stair assembly including integral stair treads and risers;

(b) integral side flanges extending downwardly and rearwardly from the opposed ends of the treads and risers;

(c) a pair of wall plates carried by the side flanges, with each wall plate extending downwardly and rearwardly from the flanges for supporting vertical compression loading imposed on the stair assembly; and

(d) means extending linearly along and in the general configuration of the opposed ends of the tread and risers for substantially their entire lengths for watertight compression sealing the side flanges to the wall plates.

4,343,121

WINDOW GLASS MOUNTING ARRANGEMENTS

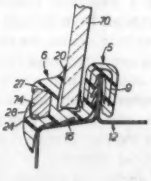
Werner Kruschwitz, and Heinz Andrzejewski, both of Viersen, Fed. Rep. of Germany, assignors to Draftex Development AG, Zug, Switzerland

Filed Sep. 26, 1979, Ser. No. 79,033

Claims priority, application United Kingdom, Oct. 14, 1978, 40604/78; Dec. 28, 1978, 50174/78

Int. Cl.³ E06B *3/62*

U.S. Cl. 52—208 15 Claims



1. A window glass mounting arrangement, comprising

flexible material which is formed to define first and second channels substantially side-by-side and facing in opposite directions,

the first channel being sized to fit over and grip a support member surrounding the window opening so that the second channel then runs alongside the window opening for receiving the window glass,

a stiffening member,

the material defining the first channel having embedded in it a metal carrier of substantially channel-shape which en-

hances the grip of the material of the first channel on the support member, the metal carrier being associated with means positively preventing significant lengthwise stretching thereof but without preventing a limited amount of lengthwise compression,

the wall of the second channel furthest from the first channel being entirely free of any embedded and inseparable metal reinforcement and being freely bendable outwardly away from the support member to receive the window glass in the second channel and defining means for receiving the said stiffening member for stiffening that wall after it has resiled, so as to secure the window glass in the second channel.

4,343,122

SYSTEM FOR ANCHORING A TENDON IN A STRUCTURAL CONCRETE UNIT

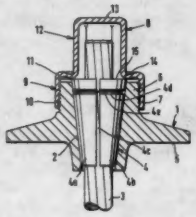
Johann Wlodkowski, and Dieter Jungwirth, both of Munich, Fed. Rep. of Germany, assignors to Dyckerhoff & Widmann Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 23, 1981, Ser. No. 227,596

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1980, 8002044[U]

Int. Cl.³ E04C *5/12*

U.S. Cl. 52—223 L 8 Claims



1. In a wedge anchoring system for anchoring a tendon extending through a structural concrete unit at a location where the tendon extends from the unit including an anchoring member arranged to bear against the concrete unit and having an axially extending central passage through which the tendon extends out of the concrete unit, the central passage through the anchoring member widens conically outwardly from the concrete unit and is arranged to form a frusto-conical seating surface for a wedge member arranged to grip the tendon, a cap elongated in the axial direction of the central passage and connectible to the anchoring member in a form-locking manner for forming a closure over the end of the anchoring member located outwardly away from the concrete unit, said cap arranged to exert a compressive force on the transverse ends of the wedge member facing outwardly away from the concrete member, wherein the improvement comprises that said cap having at least one inwardly directed projection formed integraly therewith and forming a surface within said cap extending transversely of the elongated axial direction thereof and arranged to extend into contacting engagement with the transverse ends of the wedge member facing outwardly away from the concrete member for affording the compressive force thereon.

4,343,123

COMPOSITE BRIDGE WITH PRECOMPRESSION SYSTEM

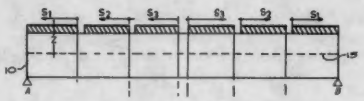
Roosseno Soerjohadikusumo, 14 Diponegoro St., Jakarta, Indonesia

Filed May 13, 1980, Ser. No. 149,444

Claims priority, application Indonesia, Jul. 16, 1979, PP/7160

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—225 21 Claims



1. A composite bridge structure having a beam for supporting loads thereon, the bridge structure comprising a plurality of spaced apart concrete consoles secured to the beam, the consoles located on the beam and being urged apart for creating a bending moment in the beam in a direction opposite to the direction of the moment created by the load supported by the beam.

4,343,124

STRUCTURAL ELEMENTS

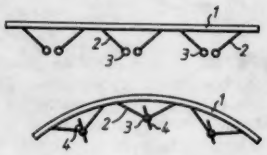
Friedrich C. Math, Farnham, England, assignor to The British Petroleum Company Limited, London, England

Filed Apr. 25, 1980, Ser. No. 144,173

Claims priority, application United Kingdom, Apr. 26, 1979, 7914503

Int. Cl.³ E04C *3/10*

U.S. Cl. 52—226 7 Claims



1. A structural building element comprising an elongate member of a fibre reinforced plastics material capable of limited flexing, pairs of rigid projecting means located along and connected to said elongate member, said projecting means having means adapted to engage and lock with a neighboring projecting means upon flexing of said elongate member.

4,343,125

BUILDING BLOCK MODULE AND METHOD OF CONSTRUCTION

Calvin Shubow, 30995 Hunter's Dr., Farmington, Mich. 48024

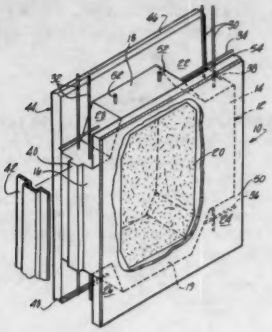
Filed Jun. 15, 1980, Ser. No. 168,992

Int. Cl.³ E04B *2/06*

U.S. Cl. 52—236.8 10 Claims

1. A building module for use in erecting a wall load bearing structure, the building module comprising a hollow rectangu-

lar member of reinforced concrete, including a pair of sides and a connecting top section defining a central space each of said



sides and top section including reinforcement bars extending there through.

4,343,126

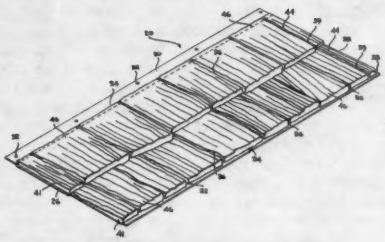
INTERLOCKING PANELS

William J. Hoofe, III, 1816 Newport Hills Dr. East, Newport Beach, Calif. 92660

Continuation of Ser. No. 16,119, Feb. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 914,614, Jun. 9, 1978, abandoned, which is a continuation of Ser. No. 725,256, Sep. 9, 1976, abandoned. This application Nov. 14, 1980, Ser. No. 206,691

Int. Cl.³ E04D *1/00*

U.S. Cl. 52—313 **10 Claims**



1. A panel for use in plurality to simulate wood shake covering an area, comprising a panel member formed from a unitary sheet of thermoplastic having upper, lower and first and second side edges, and having an area therebetween with the desired three dimensional decorative pattern on the top surface thereof simulating a plurality of individual wood shake, said decorative pattern including a hollow raised portion at least adjacent said first side edge thereof, said unitary sheet having a first planar region above said three-dimensional decorative pattern for lying flat against a surface to be covered, and a second region extended between said first planar region and said upper edge of said unitary sheets, said second region being folded through approximately 180° to overlie said first planar region to define a slot adjacent and facing the top of said decorative pattern with a double thickness nailing flange thereabove, said double thickness nailing flange being defined by a portion of said second region immediately overlying and substantially in face to face abutment with a portion of said first planar region, the remainder of said second region being formed to only overlie the first planar region with a space therebetween which is substantially unaffected by the passing of nails through said nailing flange during installation of the panels, said bottom edge of said unitary sheet being curved under to define a lip adjacent and under the lower region of said panel approximately parallel to said first planar region, said slot being proportioned to receive and retain at least a portion of the lip of a similar decorative panel, said panel member further having a raised portion adjacent said second side edge thereof, complimentary to said hollow raised portion adjacent said first side edge, whereby said first side edge of one panel may overlie the second side edge of another panel to provide a decorative pattern extending across both panels with a moisture barrier therebetween, at least one end of said slot in each panel terminating short of the adjacent edge of said panel so that the slots in adjacent panels cooperate to provide a slot of substantially uniform elevation across adjacent panels, and at least one end of said lip also terminating short of the adjacent edge of said panel so that the lips in adjacent panels are substantially colinear to mate with the slots defined by similar panels in a lower course in any desired staggered relationship.

4,343,127

FIRE DOOR

Dale R. Greve, Beaverton, and Charles W. Lehnert, Lake Oswego, both of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Continuation of Ser. No. 10,268, Feb. 7, 1979, abandoned. This application Jan. 15, 1981, Ser. No. 225,197

Int. Cl.³ E04B *2/28*

U.S. Cl. 52—785 **12 Claims**

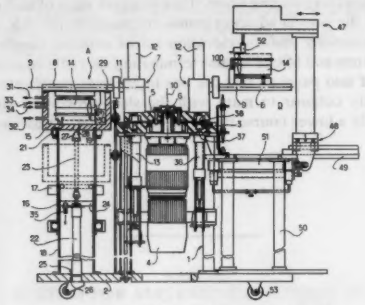
1. A fire door comprising a core and edge banding, the core comprising a molded mixture formed from particulate materials including at least 50 weight percent of expanded perlite, at least 10 weight percent of calcined gypsum and an aqueous binder, the molded core having a density of not greater than about 35 lbs./cu. ft., and the banding comprising composite banding elements each formed of a strip of wood and a strip of a cast mixture formed from an aqueous slurry of particulate materials including at least 60 weight percent of calcined gypsum, fibers, an accelerator and an aqueous binder, the cast strip having a density of at least 50 lbs./cu. ft., the wood and cast strips of each element being adhesively bonded to each other, and the banding elements being positioned at edges of the core and being secured to the core with the cast gypsum strip of each element presented inwardly toward the edge of the core.

4,343,128

METHOD AND CIRCULAR TRANSFER APPARATUS FOR AUTOMATIZED CONDITIONING OF PHARMACEUTICAL PHIALS

Edouard Mena, Marseilles, France, assignor to Publimepharm, Monte-Carlo, Monaco

Filed Sep. 17, 1980, Ser. No. 188,145
Claims priority, application France, Sep. 21, 1979, 79 23639
Int. Cl.[3] B65B *17/00*
U.S. Cl. 53—167 11 Claims



1. A rotating transfer apparatus for automated conditioning of pharmaceutical phials, which comprises:

a frame;

a plate member supported on said frame so as to be rotatable around a vertical axis;

a plurality of phial conditioning stations angularly spaced on the periphery of said rotating plate member and including at least a cleaning station and a filling station each provided with an associated conditioning pan having a bottom and an opening and adapted to contain at least momentarily a liquid for cleaning or filling said phials;

a plurality of angularly spaced devices for holding and handling sets of phials mounted on said rotating plate member and extending radially outwardly therefrom;

a controllable driving means for selectively rotating said rotating plate member;

means for controllably rotating individually said phial holding and handling devices at selected said stations around a horizontal axis extending in a radial direction so as to introduce at least partially said associated phials in a said conditioning pan, further including, at each one of said phial cleaning and filling stations, a pan supporting device onto which is releasably mounted an associated said pan and which is vertically displaceable sequentially with said means for rotating said rotating plate member and said means for rotating said phial holding and handling devices;

each said pan supporting device comprising:

a cylindrical shroud, the upper end of which is adapted to be connected to said bottom of the associated said conditioning pan, said shroud being mounted for sliding displacement on a stationary vertical support connected to said frame;

a double action cylinder means connected to said stationary support in coaxial relationship with said shroud and having one cylinder rod end terminated by an obturating and bearing head adapted to selectively come into bearing engagement with a draining opening formed in said bottom of said conditioning pan, said draining opening being shaped so as to define a fluidtight bearing seat for said operating head, and

draining means associated with said shroud.

6. The apparatus according to claim 1, comprising a station for cleaning the ends of the phials in said set of phials, which includes a pair of sponge rolls adapted for displacement in a to-and-fro movement in the radial direction.

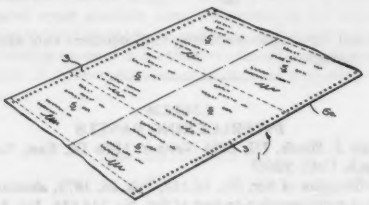
7. The apparatus of claim 6, which comprises a station for sealingly closing the ends of the filled phials, including a welding torch adapted for displacement in a radial to-and-fro movement.

4,343,129

MECHANISM OF MAKING AN ENVELOPE

William H. Gunther, Jr., Mystic; Roman M. Golicz, Clinton, and James W. Hough, Madison, all of Conn., assignors to G.B.R., Ltd., Dover, Del.

Continuation of Ser. No. 846,902, Oct. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 680,788, Apr. 27, 1976, Pat. No. 4,071,997. This application Jul. 9, 1979, Ser. No. 55,551
Int. Cl.[3] B65B *11/48*
U.S. Cl. 53—206 9 Claims



1. A mechanism for forming an envelope, comprising an envelope assembly having a sealing flap and an insert assembly, a predetermined envelope assembly being adapted to envelope a predetermined insert assembly, means for moving said predetermined envelope assembly along one path and for moving said predetermined insert assembly along another path, said paths moving in the same direction, said means for moving said predetermined insert assembly includes means for positioning the predetermined insert assembly in superimposed relationship to the predetermined envelope assembly, and for moving the two assemblies synchronously in the same direction so that said predetermined insert assembly is superimposed over said predetermined envelope assembly, said means for moving the predetermined envelope assembly includes means for causing the predetermined insert assembly to be deposited on said moving predetermined envelope assembly, means for folding the predetermined envelope assembly around the predetermined insert assembly, said predetermined envelope assembly being part of a continuous web of envelope assemblies connected together in lengthwise relationship to each other, cutter means being provided to separate the envelope assemblies from each other, said predetermined insert assembly being part of a continuous web of insert assemblies connected together in lengthwise relationship to each other, cutter means being provided to separate the insert assemblies from each other, the path of said predetermined insert assembly and said predetermined envelope assembly being in substantially superimposed relationship to each other, said envelope assembly moving means comprises conveyor means, said insert assembly moving means comprises a slide chute overlying the conveyor means down which the insert assembly slides, said slilde chute having a lower toe overlying the conveyor means, said lower toe pointing in the direction of travel of the said paths and the said conveyor, said envelope assembly moving means comprising conveyor means having upstanding pins adapted to strike the envelope assembly, slits being provided in said chute to permit the pins to strike the insert assembly and push it off the toe and onto an envelope assembly, a folding mechanism is provided adjacent the upper edge of said slide chute to fold the insert assembly, means are provided for applying adhesive to the edges of the envelope assembly, said envelope assembly fold-

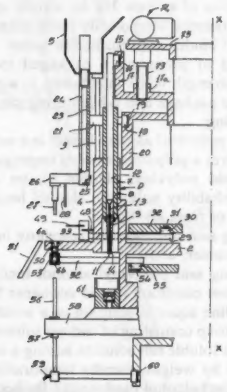
ing means comprises a ramp having a stop at its forward end and being spaced above the plane of the conveyor to form a gap and means for causing the envelope to fold along a fold line and to push the folding envelope through said gap, a deflecting mechanism is provided movable upwardly to close the gap and permit the envelope to move up the ramp and to thereafter be movable downwardly to open the gap to permit the envelope to pass through the gap, pressure applying means are provided to seal the edges of the folded envelope assembly, means are provided for transferring said folded envelope assembly to a flap folding means, said flap folding means comprises second conveyor means moving at an angle to said first conveyor means, pressure rollers are adapted to place the envelopes into contact with the second conveyor means, said pressure means comprises a roller assembly pivotally mounted above said second conveyor means, means to pivot said rollers from a raised position to allow an envelope assembly to be deposited on the second conveyor means to a lowered position in contact with the envelope assembly, means to apply adhesive to the flap and means are provided to turn the flap, and a pressure roller is provided to seal the flap.

4,343,130

CONTINUOUS MOVEMENT CAPSULE FILLING AND CLOSING MACHINE, PARTICULARLY FOR PACKAGING POWDER OR GRANULATED LOOSE PRODUCTS

Libero Facchini, Via Borgatti, 5, Bologna, Italy

Filed Nov. 6, 1979, Ser. No. 91,848
Claims priority, application Italy, Nov. 9, 1978, 3591 A/78
Int. Cl.³ B65B *1/00, 1/22*
U.S. Cl. 53—272 **3 Claims**



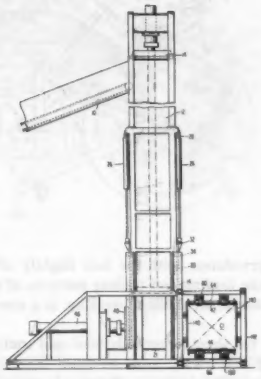
1. A capsule filling machine for filling capsules comprising a bowl portion and a cap portion with powder or granulated loose product, said machine including a turret which is continuously rotatable about a vertical axis and is formed by a plurality of sectors each comprising a station for feeding empty capsules to be filled from a container in which the capsules are randomly oriented, in closed condition, a capsule orienting station, a station for metering and loading the product into said capsules and a station for opening, closing and ejecting the loaded capsules, wherein said orienting station comprises a bushing element defining a vertical calibrated passage therein for the capsules and having a longitudinal slit and transversal upper groove and transversal lower groove intersecting said passage and said longitudinal slit, the bushing element being adapted, during operation, to slidably engage sequentially a first detent, which is adapted for penetrating the lower transversal groove to stop the downward movement of a capsule fed into the bushing element, and a second detent which is operative to penetrate the upper transversal groove and tilt the capsule over, as stopped by the first detent, by turning it upwards or downwards, in order to orient it horizontally and arrange it with its cap inside said inner passage and its bowl protruding from said longitudinal slit.

4,343,131

METHOD AND APPARATUS FOR PRODUCING BALES

Lloyd G. McCormick, Asheville, and Robert E. Score, Arden, both of N.C., assignors to EA Industries, Incorporated, Asheville, N.C.

Filed May 2, 1980, Ser. No. 146,128
Int. Cl.³ B65B *13/20, 63/02*
U.S. Cl. 53—397 **25 Claims**



1. A method of producing bales of loose compressible material such as tobacco, the steps comprising, compressing the material in a compression chamber, conveying individual upper and lower packing members for each bale having generally planar inside surfaces along upper and lower spaced generally horizontal and parallel paths to a compressed material receiving station, pushing the compressed material out of the chamber along a first path and directly to and between said opposed packing members and into direct engagement therewith at said receiving station, holding said members stationary and supporting them against movement away from each other under the pressure of the compressed material engaging the packing members, conveying the packing members with the compressed material therebetween to a strapping station while maintaining the support of the packing members to prevent movement away from each other, and then strapping the packing members with the material therebetween to a predetermined tension to form a bale, and wherein the method further includes the step of pushing the material against a stop surface after leaving the compression chamber and arriving between the packing members.

4,343,132

BALE WRAPPING DEVICE AND METHOD

Joseph F. Lawless, Jr., R.R. 2, Box 187, Jacksonville, Ill. 62650

Filed Dec. 28, 1979, Ser. No. 108,287
Int. Cl.³ B65B *11/04, 13/02*
U.S. Cl. 53—399 **28 Claims**

1. A method for wrapping flexible sheet material around a bale of a hay-like crop, comprising the steps of:

providing a bale of hay-like crop resting on the ground,

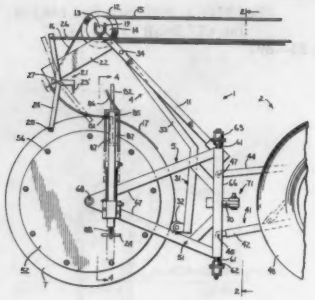
rotatably supporting a roll of said material on the frame of a farm implement having a pair of bale holding discs rotatably carried by two swing arms mounted on the two sides, respectively, of said frame for rocking movement about two spaced, substantially vertical axes between a closed position and an open position,

moving said implement, with said swing arms and discs in open position, against a bale on the ground,

rocking said swing arms with said discs thereon into closed position so that the two ends of said bale are engaged by said discs, respectively,

raising said frame to lift said bale slightly off the ground,

causing said discs and the bale engaged thereby to be rotated, together with a holding element urging the sheet material pulled off said roll against said bale by more than



one revolution with the bale slightly off the ground, so that the leading and trailing portions of the flexible sheet of material are made to overlap, in a zone underneath the bale,

cutting the sheet material behind said trailing portion, and

rocking said swing arms to open said discs and thereby release said bale so that the overlapping leading and trailing portions of the wrapped sheet material are held in position by the weight of the bale.

4,343,133

POLYVINYL ACETATE LATEX IMPREGNATED TOWELETTE

Wiley E. Daniels, Easton, Pa.; George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 870,551, Jan. 18, 1978, Pat. No. 4,245,744. This application Jun. 26, 1980, Ser. No. 163,240

Int. Cl.³ B65B *5/04*

U.S. Cl. 53—431 **6 Claims**

1. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water, comprising:

(a) forming an emulsion binder of a vinyl acetate-ethylene copolymer containing polyvinyl alcohol as a protective colloid in a web of nonwoven fibers to form an emulsion impregnated towelette;

(b) packaging said impregnated towelette in an impervious, closed container; and

(c) maintaining said emulsion binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of boric acid having a concentration of at least 3% by weight up to its limit of solubility, thereby temporarily insolublizing said binder until flushed in water.

2. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water comprising:

(a) forming an emulsion binder of a vinyl acetate-ethylene copolymer containing a water soluble polyvinyl alcohol as a protective colloid in a web of nonwoven fibers to form an emulsion impregnated towelette;

(b) packaging said impregnated towelette in an impervious, closed container; and

(c) maintaining said binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of a water soluble salt selected from the group consisting of sodium sulfate and potassium citrate, wherein said binder is temporarily insolubilized until flushed in water.

4,343,134

FLUSHABLE TOWELETTE

George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 870,552, Jan. 18, 1978, Pat. No. 4,258,849. This application Jun. 26, 1980, Ser. No. 163,243

Int. Cl.³ B65B *5/04*

U.S. Cl. 53—431 **4 Claims**

1. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water, comprising:

(a) forming a polyvinyl alcohol binder in a web of nonwoven fibers to form a polyvinyl alcohol impregnated towelette, wherein said polyvinyl alcohol binder consists of enhanced flushability polyvinyl alcohol having a degree of hydrolysis of from 80–95%;

(b) packaging said impregnated towelette in an impervious closed container; and

(c) maintaining said polyvinyl alcohol binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of boric acid having a concentration of at least 3% by weight up to its limit of solubility, thereby temporarily insolubilizing said polyvinyl alcohol binder until flushed in water.

2. A method of preparing a packaged towelette having enhanced wet strength while maintained in wet condition in a sealed container package and while during use until flushed in water, comprising:

(a) forming a polyvinyl alcohol binder in a web of nonwoven fibers to form a polyvinyl alcohol impregnated towelette, wherein said polyvinyl alcohol binder consists of enhanced flushability polyvinyl alcohol having a degree of hydrolysis of from 80–95%;

(b) packaging said impregnated towelette in an impervious closed container; and

(c) maintaining said polyvinyl alcohol binder in a gel-like form in a wet condition in said container by contact with a non-alkaline aqueous solution of a soluble salt selected from the group consisting of sodium sulfate and potassium citrate, said soluble salt solution having a concentration of at least 3% by weight, thereby temporarily insolubilizing said polyvinyl alcohol binder until flushed in water.

4,343,135

SUPPORT FRAME AND METHOD OF MAKING AND PACKAGING THE SAME

Daniel F. Ilich, 149-44 Cherry Ave., Flushing, N.Y. 11255

Continuation-in-part of Ser. No. 924,984, Jul. 17, 1978, Pat. No. 4,262,810. This application Aug. 2, 1979, Ser. No. 63,055

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.³ B65B *19/00*

U.S. Cl. 53—444 **2 Claims**

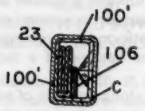
1. A method of packaging the components of a support frame comprising a pair of U-shaped end supports interconnected by a pair of opposed side rails comprising the steps of,

forming said pair of U shaped end supports as a rectilinear elongated member of an angular cross section having angularly disposed web portions,

forming a notch in a web portion of each of said elongated members at spaced apart intervals intermediate to the ends

thereof, whereby said elongated members can be readily folded at said notched portions to define U shaped end support,

placing said unfolded members in face to face relationship,



locating the side rails between said faced to faced elongated members,

and releaseably securing said elongated members and side rails disposed therebetween to define a compact unit in the disassembled position of said support frame.

4,343,136

HARNESSING SYSTEM FOR LUNGING HORSES

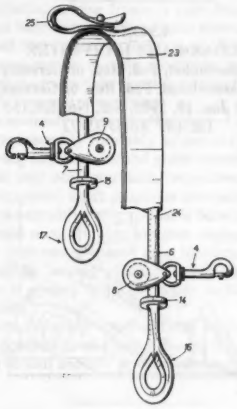
Eric LeTixerant, 8, rue Erlanger, 75016 Paris, and Philippe LeTixerant, 66, rue Ponsardin, 51100 Reims, both of France

Filed May 1, 1980, Ser. No. 145,691

Claims priority, application France, May 4, 1979, 79 11238; Nov. 15, 1979, 79 28238

Int. Cl.³ B68B *1/04*

U.S. Cl. 54—14 **4 Claims**



1. Supplemental head equipment attached to a conventional horse head-stall having bit rings and to a lunge for the purpose of lunging a horse, comprising a head piece having a central substantially U-shaped portion adapted to rest against the nape of the horse's neck, the central portion of the head piece comprising a sheath having open ends, and a tie element extending through the sheath and having end parts at opposite ends thereof adapted to lie on either side of the neck, a pair of linking elements each including a releasable fastener at one end thereof for attachment to a respective bit ring of the head-stall, the elements also each including a rotatable pulley at the other end thereof spaced from the fastener, the end parts extending partially about the pulleys and through the spacings between the pulleys and the fasteners, the end parts terminating at predetermined distances from the pulleys and having stop blocks adjacent the terminal ends thereof which strike against one or the other of the pulleys when lunging the horse with a left hand or right hand lead, and ring-shaped elements secured to the terminal ends of the end parts for attachment of the head piece with the lunge.

4,343,137

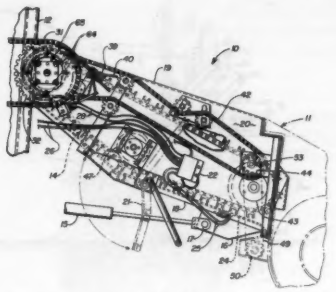
CROP ELEVATOR DECELERATING MEANS

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Aug. 25, 1980, Ser. No. 181,331

Int. Cl.³ A01D *75/18*

U.S. Cl. 56—10.2 **28 Claims**



1. In a harvesting and threshing machine for harvesting crop material from a field with a header attached thereto and apparatus for processing the crop material having:

(a) a mobile frame;

(b) power means mounted to the frame to propel the machine across the field and to drive the moving components thereon;

(c) an infeed housing mounted to the frame and the header and having two opposing sides interconnected by a floor and an opposing top;

(d) a crop elevator movably mounted within the infeed housing to convey crop material from the header into the machine for processing, said crop elevator including a drive means connectable to the power means to operatively drive the crop elevator;

(e) stone sensing means connected to the machine to identify the presence of stone-like objects within the crop material being conveyed for processing and effective to send a signal upon such identification;

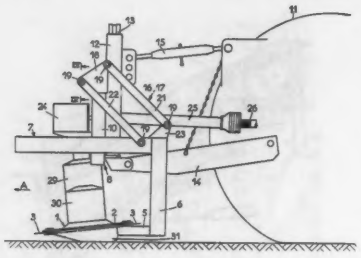
(f) drive control means connectable to the crop elevator effective selectively to disconnect the drive to the elevator after identification by the stone sensing means so that the elevator ceases to be actively driven thereby preventing detected stone-like objects from being conveyed to the machine, said drive means including a rotatable shaft with at least a first drive transfer means and a second drive transfer means mounted thereto, the first drive transfer means being connected to the power means and the drive control means and the second drive transfer means being drivingly connected to the first drive transfer means and via the shaft connected to the crop elevator; and

(g) controlled overrun means cooperable with the drive control means and the crop elevator for a rapid dissipation of the inertia of the crop elevator when the drive thereto is disconnected so that the movement of the crop elevator is halted before any detected stone-like objects can be conveyed to the crop material processing apparatus without causing damage to the infeed housing or the drive means.

4,343,138
SUPPORTING STRUCTURE FOR AN AGRICULTURAL MACHINE

Horst Neuerburg, Haegen, France, assignor to Kuhn S.A., Saverne, France

Filed Jun. 10, 1980, Ser. No. 158,257
Claims priority, application France, Jun. 19, 1979, 79 16486
Int. Cl.³ A01D *35/14*
U.S. Cl. 56—15.9 **6 Claims**



1. A supporting structure for an agricultural machine, and connectable to a vehicle, movable in a first direction in a plane substantially parallel to the ground

comprising in combination:

a first frame adapted to be connected to the vehicle,

a second frame adapted to be connected to the agricultural machine, and

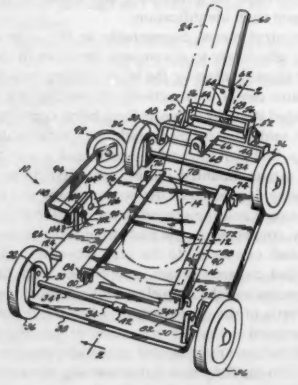
parallelogram means interconnecting said frames, and including spherical joints permitting movement therebetween in several directions, including an upright direction, a direction opposite thereto, in lateral directions substantially at right angles to said first and upright directions, and

restraining means limiting the movement between said frames in said lateral directions, and including portions of said frames arranged to block the path of each other.

4,343,139
CARRIAGE FOR A GRASS TRIMMING DEVICE

Joseph M. Lowry, 308 Sweetbriar Dr., and Ernest E. Griffin, 12306 Ridgefield Pkwy., both of Richmond, Va. 23233

Continuation-in-part of Ser. No. 119,176, Feb. 6, 1980, Pat. No. 4,287,709. This application Apr. 8, 1981, Ser. No. 252,221
Int. Cl.³ A01G *3/06*
U.S. Cl. 56—16.9 **1 Claim**



1. A carriage for a trimming device of the type having a motor, a housing for the motor, a cutting element in the form of a length of cable connected to said motor so as to be rotatable about an axis at high speed for cutting grass, weeds and the like, said housing being of the type having a skirt extending generally transverse to the axis of rotation of the motor, said carriage comprising:

a platform having a top and a bottom side, means for supporting said platform for movement over the grounds,

an aperture in said platform for receiving and supporting the skirt portion of the housing of a motor driven cutting device,

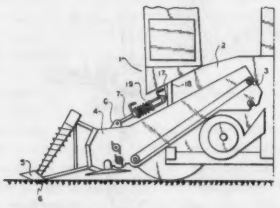
said platform having along one side of said aperture thereof flange means for engaging the front edge of the skirt of the housing of a motor driven cutting device,

releasable clamping means movably mounted on said top side of said platform for securely holding the cutting device in said aperture with the cutting element disposed to extend from said bottom side of said platform and with the motor on said top side thereof above said aperture, said clamping means including a retaining arm in the form of a flexible metal rod having one end pivotably mounted on one side of said aperture, hook means for the other end of said rod mounted on said platform on the opposite side of said aperture, said retaining arm being pivotable between a retracted position wherein a grass trimming device can be inserted into said aperture with the leading edge of the skirt portion thereof engageable by said flange means, and a closed position wherein said arm extends in a housing engaging in retaining relationship with the trimming device.

4,343,140
SUGAR-CANE HARVESTER

Josef Hegger, Harsewinkel, Fed. Rep. of Germany, assignor to Claas OHG, Harsewinkel, Fed. Rep. of Germany

Filed Jan. 19, 1981, Ser. No. 226,153
Int. Cl.³ A01D *35/12*
U.S. Cl. 56—17.1 **14 Claims**



1. A self-propelled sugar-cane harvester, comprising a frame; a supporting pin mounted on said frame; a cutter unit vertically swingably supported on said pin; said cutter unit having a longitudinal axis and including a skid adapted to engage the ground in the travelling path of the harvester; spring-biasing means mounted between said frame and said cutter unit and adapted to counteract the major portion of the weight of said unit; adjusting means for regulating the movement of said unit relative to the ground when said skid meets raised portions and depressions in said travelling path, said adjusting means including a double-acting piston-cylinder unit having a piston operatively connected to said cutter unit and a cylinder operatively connected to said frame, a first supporting plate having a bore to receive said cylinder, and a second supporting plate also receiving said cylinder and rigidly connected thereto, said first supporting plate being spaced from said second supporting plate along the length of said cylinder to form a space therebetween, said spring-biasing means including a compression spring located in said space, said adjusting means being adapted to automatically regulate the movement of said unit in dependence upon each inclined position of

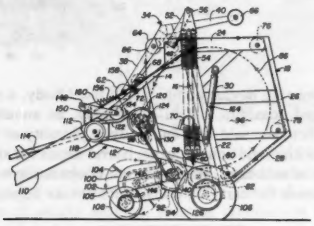
said cutter unit relative to said longitudinal axis when said skid engages uneven ground and to provide for relatively smooth travelling of the harvester over uneven ground; and manually-operated means for controlling said movement of said cutter unit relative to the ground.

4,343,141

BALING MACHINE WITH IMPROVED ARM ASSEMBLY FOR CONTROLLING EXPANSION OF THE UPPER APRON

Franklin A. Oellig, Leola, and Willis R. Campbell, Ephrata, both of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Sep. 16, 1981, Ser. No. 302,928
Int. Cl.³ A01D *39/00*
U.S. Cl. 56—341 **6 Claims**



1. In a roll baling machine having forward and rearward ends and including a base frame, a rear frame pivotally connected to said base frame, apron means supported on said base frame and said rear frame for forming a roll bale of crop material, said apron means moving from one position when the machine is empty to another position during formation of a roll bale, the improvement comprising:

(a) an arm assembly for supporting part of said apron means;

(b) said arm assembly rotatably mounted on said base frame and having first and second guide members for engaging the inner and outer surfaces, respectively, of said apron means at spaced apart locations therealong;

(c) said arm assembly being rotatable between a first position where said second guide member engages the outer surface of said apron means at a location inside said rear frame and a second position where said second guide member is spaced from the outer surface of said apron means; and

(d) said arm assembly rotating from its first position to its second position as said apron means moves from said one position to said another position during formation of a roll bale.

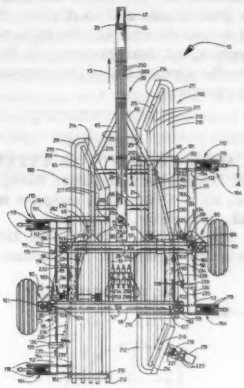
4,343,142

APPARATUS HAVING A VARIABLE ATTITUDE WORK IMPLEMENT

David R. Allen, 6744 E. Belmont, Fresno, Calif. 93727

Filed Apr. 28, 1980, Ser. No. 144,610
Int. Cl.³ A01D *76/00*
U.S. Cl. 56—377 **20 Claims**

1. An apparatus comprising an adjustable frame adapted for earth traversing movement in a direction of travel and having a movable portion adapted for extension and contraction substantially laterally of the direction of travel; a work assembly including a subframe, a work implement, links pivotally interconnecting the subframe and the work implement to mount the work implement for movement along a path toward and from the earth and power means interconnecting the subframe and one of said links for expansion and contraction to move the work implement along said path, said power means including an hydraulic cylinder assembly having a range of expansion and contraction less than the range of movement of the work implement permitted by said links and one end of said hydraulic cylinder assembly is connected to said one of the links, an adjustment assembly mounted on the subframe in supporting relation to the hydraulic cylinder assembly and being adjustable to move the hydraulic cylinder assembly along a path toward and from the subframe and to support the hydraulic cylinder assembly at any selected position in said path, and an hydraulic system operably connected to the hydraulic cylinder assembly selectively operable to expand and alternatively to



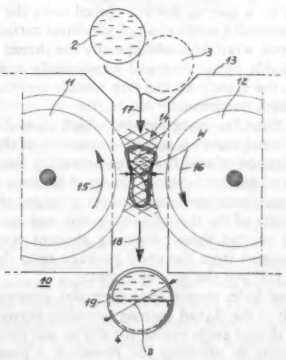
contract the hydraulic cylinder assembly within said range; means mounting said work assembly on said movable portion of the frame for substantially pivotal movement about a substantially vertical axis through a plurality of attitudes relative to said direction of travel; and control means for moving the work assembly to a selected one of said attitudes in response to predetermined adjustment of the frame.

4,343,143

BINDING FOR FIBER BUNDLES, A METHOD FOR THE PRODUCTION OF THE BINDING AND AN APPARATUS FOR CARRYING OUT THE METHOD

August Baumgartner, Uster, Switzerland, assignor to Zellweger, Ltd., Uster, Switzerland

Filed May 13, 1980, Ser. No. 149,545
Claims priority, application Switzerland, Sep. 28, 1979, 8784/79
Int. Cl.³ B65H *69/06, 69/00*
U.S. Cl. 57—22 **45 Claims**



1. A method for the production of a binding wherein a plurality of fiber bundles are to be bound together, comprising the steps of positioning the fiber bundles so that they are at

least approximately parallel to each other and are close together; exerting both thrust as well as tractive and/or pressure forces on at least one part of the circumference of each of the fiber bundles to be bound including subjecting the entirety of the fiber bundles to agitated deformation by means of physical contact with the bundles in order to change the original cross sections and/or structure of the fiber bundles and to release the individual fibers of at least one of the fiber bundles at least partly from their bundle and to displace them so that they finally wind around the fiber bundles to be bound in a manner locked by tension; and then relocating the fiber bundles which are bound by the winding out of the operational region of the deformation operation.

4,343,144

CONTROL ARRANGEMENT FOR A TEXTILE MACHINE

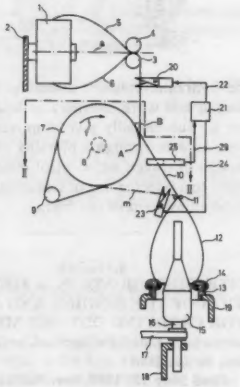
Walter Ernst, Weinfelden; Hans Giger, Riedt, and Ernst Sigrist, Turbenthal, all of Switzerland, assignors to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Feb. 13, 1981, Ser. No. 234,259

Claims priority, application Switzerland, Feb. 28, 1980, 1584/80

Int. Cl.³ D01H *13/16*

U.S. Cl. 57—86 **6 Claims**



1. In a control arrangement for a textile machine equipped with at least one roll having a roll axis and a ring spindle system, wherein a thread along its path of travel from a creel package to a take-up bobbin placed onto the spindle first is wound around a substantially cylindrical surface of the roll in at least one wrap, and subsequently the thread is guided via a thread guide eyelet arranged substantially coaxially with respect to the spindle to the ring spindle system, the improvement which comprises:

a first thread severing element which viewed in the direction of thread travel, is arranged upstream of the roll and upon activation of said first thread severing element severs the thread passing between the creel package and the roll;

a second thread severing element arranged at the immediate vicinity of the thread guide eyelet and upon activation of said second thread severing element severs the thread unwound from the creel package onto the roll between the roll and the take-up bobbin;

a thread feeler shaped as an open slot, arranged in the thread path of the thread running normally between the roll and the thread guide eyelet, the slot of said thread guide being capable of releasing the thread in a plane substantially perpendicular to the roll axis, and said slot being open at a side facing the roll; and

a control device for effecting activation of both thread severing elements in the absence of a thread in the thread feeler.

4,343,145

ROTATING RING

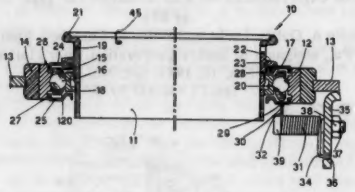
Giovanni Barro, Imola, Italy, assignor to Officine Savio S.p.A., Pordenone, Italy

Filed Sep. 24, 1980, Ser. No. 190,185

Claims priority, application Italy, Sep. 24, 1979, 83458 A/79

Int. Cl.³ D01H *7/56*

U.S. Cl. 57—124 **18 Claims**



1. Rotating ring device comprising a fixed body, a rotating ring arranged coaxially in said fixed body, an annular cage interposed between said ring and body, a plurality of spheres positioned within said annular cage, lateral means for shielding and closure of said cage, braking means cooperating with said cage and means for carrying out required brake adjustment.

4,343,146

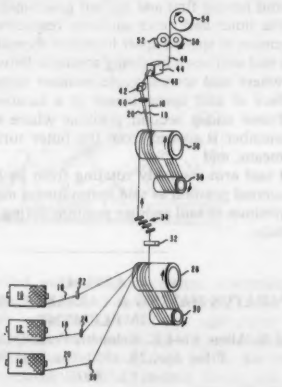
BULKED CONTINUOUS FILAMENT YARN WITH COLOR-POINT HEATHER

Thomas L. Nelson, Georgetown, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 135,126, Mar. 28, 1980, abandoned. This application Sep. 29, 1980, Ser. No. 192,033

Int. Cl.³ D02G *3/34*

U.S. Cl. 57—208 **14 Claims**



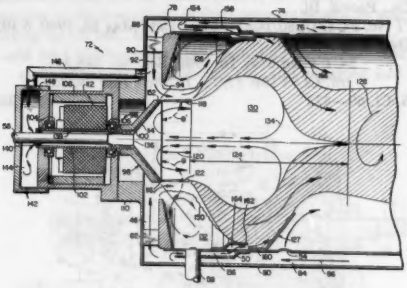
1. A heather-dyeable or heather-dyed synthetic combined yarn comprised of a first yarn in the form of a relatively loose matrix of crimped filaments which are randomly intermingled with portions of at least one second bulked yarn which is differentially-dyeable or differentially-dyed with respect to said first yarn and which contains frequent periodic relatively compact nodal regions of high filament entanglement across the entire filament bundle of the second yarn which nodal regions are substantially free from intermingling with filaments of said first yarn, said nodal regions being separated from one another along the second yarn by bulkier relatively open regions of the same filaments randomly intermingled with filaments of said first yarn to provide a coherent combined yarn.

4,343,147

COMBUSTORS AND COMBUSTION SYSTEMS

Jack R. Shekleton, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 7, 1980, Ser. No. 128,199
Int. Cl.[3] F23R 3/20; F02C 7/22
U.S. Cl. 60—39.06 11 Claims



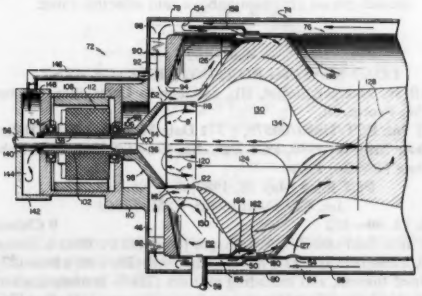
1. A method of effecting the stable, nonluminous combustion of a liquid fuel which comprises the steps of: generating an annulus of axially moving, rotating combustion air; forming the liquid fuel being burned into a thin, uniform, annular, stratified, atomized film of fuel on the inner boundary of said combustion air annulus at a specified location therealong; vaporizing said atomized fuel while it remains in said stratified film; and thereafter rapidly expanding said annuli of combustion air and vaporized fuel and then so effecting a downstream contraction of the fuel-air mass by way of a mechanical or aerodynamic constraint as to promote the mixing and subsequent combustion of said vaporized fuel and air and the formation of a recirculation zone containing hot gases which stabilize the flame generated by the combustion of the fuel and air and effect said vaporizing of the stratified atomized fuel and the heating of the vaporized fuel before said vaporized fuel is mixed with the combustion air.

4,343,148

LIQUID FUELED COMBUSTORS WITH ROTARY CUP ATOMIZERS

Jack R. Shekleton, San Diego, Calif., assignor to Solar Turbines Incorporated, San Diego, Calif.

Filed Mar. 7, 1980, Ser. No. 128,359
The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.
Int. Cl.[3] F02C 7/22
U.S. Cl. 60—39.06 24 Claims



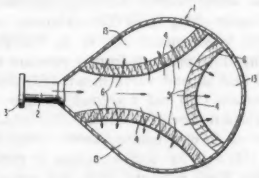
2. A method of effecting the stable non-luminous combustion of a liquid fuel which comprises the steps of: generating an annulus of axially moving, rotating combustion air; forming a thin, uniform film of atomized fuel on the inner boundary of said annulus at a specified location therealong by employment of a rotating cup-type atomizer; aerodynamically constraining said annulus against expansion for a period sufficient to effect the evaporation of said fuel; thereafter expanding the air in said annulus and then effecting a downstream contraction of the fuel-air mass to promote the mixing and subsequent combustion of said fuel and air and the formation of a recirculation zone containing hot gases which stabilize the flame generated by the combustion of the fuel and air and so ignite the fuel as to effect evaporation and heating of the fuel before it is mixed with the combustion air, said aerodynamic constraint being produced by effecting a radial inward movement of said combustion air, imparting a rotational component thereto, and then flowing the combustion air through an orifice to generate a vena contracta effect in said annulus of combustion air.

4,343,149

SOOT FILTER IN THE EXHAUST GAS STREAM OF AIR-COMPRESSING INTERNAL COMBUSTION ENGINES

Jörg Abthoff, Plüderhauser; Hans-Dieter Schuster, Schorndorf; Hans-Joachim Langer, Remseck, and Rolf Gabler, Waiblinger, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 27, 1979, Ser. No. 97,694
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852226
Int. Cl.[3] F01N 3/02
U.S. Cl. 60—311 8 Claims



1. A soot filter in the exhaust gas flow of an air-compressing internal combustion engine, comprising an approximately cylindrically-shaped filter housing means arranged for receiving exhaust gases from the internal combustion engine, inlet connection means connected to the filter housing means and ceramic fiber material arranged in the filter housing means, characterized in that the fiber material is constructed as a plurality of arcuately-shaped filter walls which bow inwardly, said filter walls, together with the inner wall surfaces of the filter housing means, form hollow spaces that extend lengthwise within the housing means in a manner requiring the exhaust gases to pass through the filter walls prior to entering the hollow spaced, said hollow spaces forming a means for conducting the exhaust gases essentially in an axial direction of the filter housing means to an exhaust line means, said exhaust line means being connected to an end wall of said filter housing means so as to extend therefrom substantially in said axial direction.

4,343,150

SEQUENTIAL PRECONDITIONING CIRCUIT FOR HYDROSTATIC TRANSMISSION

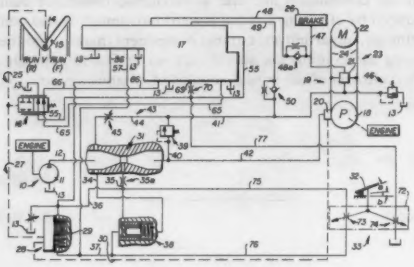
Lucien B. Shuler, Bettendorf, Iowa, and William J. Spivey, Jr., Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00414, § 371 Date Jun. 13, 1979, § 102(e) Date Jun. 13, 1979, PCT Pub. No. WO80/02865, PCT Pub. Date Dec. 24, 1980

PCT Filed Jun. 13, 1979, Ser. No. 89,321

Int. Cl.³ F16H *39/46*

U.S. Cl. 60—399 **29 Claims**



1. A fluid control circuit comprising

a source of pressurized fluid (10),

variable displacement pump means (18) for having the displacement thereof varied, said variable displacement pump means (18) including a servo system (20) adapted to vary the displacement of said pump means (18),

a motor (22) connected in a closed loop with said pump means (18) forming a hydrostatic transmission,

a replenishing valve (21) connected between said source (10) and said pump means (18) to make-up loss of fluid and to controllably interrupt fluid from said pump means (18),

first valve means (16) including supply and vent passages therein for movement between first and second positions,

pressure responsive second valve means (53) for movement between a first position blocking communication of fluid to said replenishing valve (21) in response to positioning of said first valve means (16) in its first position to vent actuating fluid pressure from a pressure responsive portion of said second valve means (53) through said first valve means (16) and a second position communicating fluid to said replenishing valve (21) in response to communication of fluid pressure thereto when said first valve means (16) is in its second position to prevent venting of actuating fluid pressure from the pressure responsive portion of said second valve means (53) through said first valve means (16), and

pressure responsive third valve means (60) for movement between a first position blocking communication of fluid from said source (10) to said second valve means (53) while no source fluid is present when said first valve means (16) is in its first position communicating said source (10) with a pressure responsive portion of said third valve means (60) and a continuously maintained second position communicating fluid from said source (10) to said second valve means (53) in response to communication of fluid pressure thereto from said source (10) and when said first valve means (16) is in each of its first and second positions when source fluid (10) is present, said second valve means (53) being further responsive for movement to its second position in response to communication of fluid pressure thereto upon positioning of said first valve means (16) in its second position and positioning of said third valve means (60) in its second position, each of said first (16), second (53), and third (60) valve means connected to said source (10) and also connected to each other.

4,343,151

SERIES - PARALLEL SELECTOR FOR STEERING AND IMPLEMENT

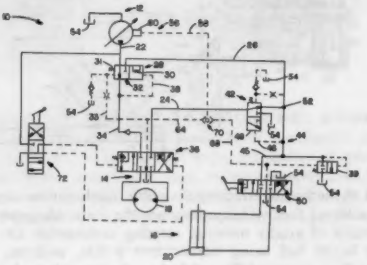
Larry W. Lorimor, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00577, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980

PCT Filed May 16, 1980, Ser. No. 245,241

Int. Cl.³ F15B *11/16, 13/06;* F16H *39/46*

U.S. Cl. 60—422 **6 Claims**



1. In a control system (10) having a pressurized fluid source (12), a first work circuit (14) which has an output flow, a second work circuit (16), an input flow path (22) connected to deliver flow of pressurized fluid from the source (12) to the first circuit (14), and a series flow path (24) connected to receive the output flow from the first circuit (14) and to deliver the output flow to the second circuit (16), the improvement comprising:

a parallel flow path (26) connected to the source (12) and to the second circuit (16) and being adapted to receive a portion of the flow from the source (12) and deliver said portion to the second circuit (16);

a single valve means (42) in the series flow path (24), having an open position adapted to direct flow from the series flow path (24) to the second work circuit (16) and a closed position adapted to block flow from the series flow path (24) to the second work circuit (16), means biasing said single valve means to said open position; and

pressure responsive means (44) in continuous open communication with said parallel flow path (26) for permitting opening of said single valve means (42) by said biasing means in response to load pressure in the second circuit (16) being below a selected value and for closing said single valve means (42) in response to load pressure in the second circuit (16) being above said selected value.

4,343,152

LOAD SENSING PORTING ARRANGEMENT

Cyril W. Habiger, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00579, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980, PCT Pub. No. WO81/03362, PCT Pub. Date Nov. 26, 1981

PCT Filed May 16, 1980, Ser. No. 245,230

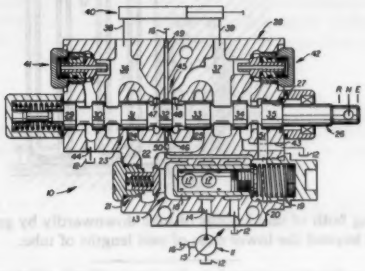
Int. Cl.³ F04B *49/08;* F15B *13/04*

U.S. Cl. 60—452 **9 Claims**

1. In a fluid circuit (10) having a pump (11), a fluid actuator (40), a control valve (23) having a housing (28) with a bore (27) defined therein, and including an inlet (22) in communication with said bore (27) and connected to said pump (11), first (36) and second (37) outlets in communication with said bore (27) and connected to said actuator (40), spool means (26) in said bore (27) and being sequentially movable between a first posi-

tion (R) communicating said inlet (22) with said first outlet (36), a second position (N) blocking communication of said inlet (22) with each of said first (36) and second (37) outlets, and a third position (E) communicating said inlet (22) with said second outlet (37), load sensing means (45) for sensing fluid pressure in said first (36) and second (37) outlets when said spool means (26) is in its first (R) and third (E) positions, respectively, and control means (13,15) for being controlled in response to the magnitude of fluid pressure sensed by said load sensing means (45), the improvement comprising:

said load sensing means (45) including an annular land (32) defined on said spool means (26) and engaging said bore



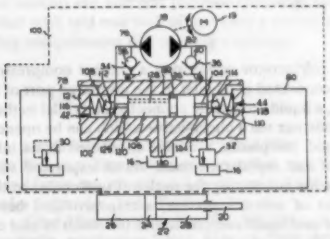
(26), and a single annulus (46) disposed in said housing (28) axially between said directly adjacent to said first (36) and second (37) outlets and being of lesser width than the width of said annular land (32), said annulus (46) opening to said bore (27) and circumventing said land (32) to block communication with said first (36) and second (37) outlets when said spool means (26) is in its second position (N) and communicating with said first (36) or second (37) outlet when said spool means (26) is in its first (R) or third (E) position, respectively, and passage means (16) for communicating fluid pressure from said annulus (46) to said control means (15).

4,343,153

ANTI-SUPERCHARGE PRESSURE VALVE

Calvin V. Kern, Maumee, and Bruce W. Mitton, Fayette, both of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Mar. 21, 1980, Ser. No. 132,555
Int. Cl.³ F15B 13/042
U.S. Cl. 60—460 **2 Claims**



1. A device for moving and maintaining the position of a load moveable in at least two directions, comprising:

a supply of fluid;

a reversible pump connected to said supply of fluid, having a first port and a second port; p1 a cylinder operably connected to said pump and having a piston dividing said cylinder into a first chamber and a second chamber, said piston having a rod attached thereto, said rod extending through said first chamber and outside said cylinder;

valve means operably connected between said cylinder and said pump;

said valve means including a unitary pilot means, said pilot means being a piston means moveable in response to pressurized fluid from said pump, said piston means having a first portion and a second portion;

first and second check valve means adjacent respective said first and second portions of said piston means and operable respectively thereby to allow flow of said fluid from said first and second chambers of said cylinder, respectively, to said pump, each said check valve means being operably connected to said pump and to said cylinder;

said valve means including a conduit interposed between said second port and said supply of fluid, and includes means for blocking said conduit and means responsive to pressure at said first port for opening said conduit;

said piston means being interposed in said conduit;

said piston means including an annular groove formed in said piston means and a passage formed in said piston means between said second portion thereof and said annular groove and being in continuous communication therewith;

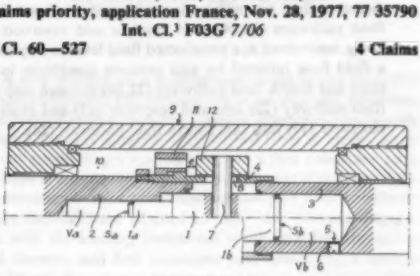
said conduit being blocked and said first check valve being operated by said piston means when said piston means is in a first position responsive to pressure at said second port applied to said second portion, and said axial passage and annular groove being interposed in said conduit to open said conduit and said second check valve being operated by said piston means when said piston means is in a second position in response to pressure at said first port applied to said first portion.

4,343,154

MOTIVE DEVICE FOR CONVERTING A VARIATION IN TEMPERATURE INTO MECHANICAL ENERGY

Jean M. Jarret, 4 rue de Mareil, Montainville 78124 Mareil sur Mauldre, and Jacques H. Jarret, 32, allee des Soudanes, 78430 Louveciennes, both of France

Filed Nov. 20, 1978, Ser. No. 962,023
Claims priority, application France, Nov. 28, 1977, 77 35790
Int. Cl.³ F03G 7/06
U.S. Cl. 60—527 **4 Claims**

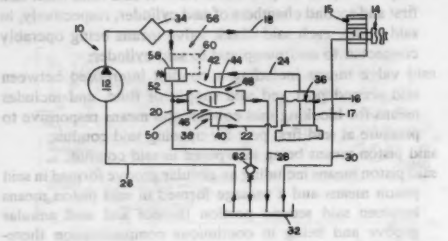


1. A motive device adapted to convert a variation in temperature to which it is subjected into mechanical energy, said device including first and second piston chambers rigidly secured to each other and having different cross-sectional dimensions, a piston having first and second ends slidably mounted with said first end in said first chamber, and its second in said second chamber, said piston ends and chambers cooperating to define in the first chamber a first closed volume and in the second chamber a second closed volume, larger than the first closed volume, each of said volumes being filled with elastomer under pressure and each of said chambers including separate means for establishing and regulating pressure therein whereby each chamber and corresponding end of the piston constitute a spring involving the hydrostatic compression of the elastomer.

4,343,155
RESERVOIR FILLING APPARATUS

Robert A. Stinson, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00635, § 371 Date May 23, 1980, § 102(e) Date May 23, 1980, PCT Pub. No. WO81/03309, PCT Pub. Date Nov. 26, 1981
PCT Filed May 23, 1980, Ser. No. 245,247
Int. Cl.³ B60T 11/26
U.S. Cl. 60—586 9 Claims



1. In a hydraulic circuit (10) having a pressurized fluid source (12), first and second fluid pathways (18,20) and a first work element (14), said first fluid pathway (18) being in fluid communication with said fluid source (12), and positionable in fluid communication with said second fluid pathway (20) and said first work element (14), the improvement comprising:

third and fourth fluid pathways (22,24);

first means (38) for initiating a first preselected pressure condition in said third fluid pathway (22) in response to a fluid flow in said second fluid pathway (20);

second means (42) for initiating a second preselected pressure condition in said fourth fluid pathway (24) in response to said fluid flow in said second fluid pathway (20), said second pressure condition being of a magnitude less than said first pressure condition; and

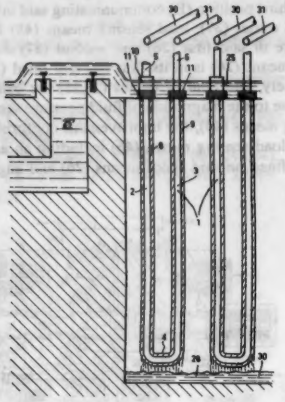
a second work element (16) having a reservoir (17) containing fluid at a fluid level, said reservoir (17) being positioned in fluid communication with said third and fourth fluid pathways (22,24), said fluid in said reservoir (17) being maintained at a preselected fluid level in response to a fluid flow initiated by said pressure conditions in said third and fourth fluid pathways (22,24) through said third fluid pathway (22) into said reservoir (17) and from said reservoir (17) into said fourth fluid pathway (24).

4,343,156
RE-HEATING CRYOGENIC FLUIDS

Pierre Gauthier, Fresnes, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Feb. 24, 1981, Ser. No. 237,736
Claims priority, application France, Feb. 29, 1980, 80 04509
Int. Cl.³ F17C 7/02
U.S. Cl. 62—52 11 Claims

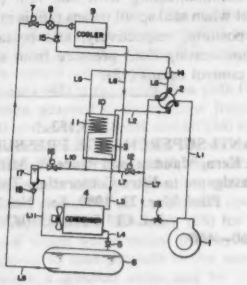
1. A method of reheating a cryogenic fluid by heat exchange with a heat-carrying fluid the freezing point of which is higher than the temperature of said cryogenic fluid prior to its final reheating, comprising introducing the cryogenic fluid into the upper end of a length of vertical tube, passing the cryogenic fluid down through that length of tube and up through another length of vertical tube, removing the reheated cryogenic fluid from the upper end of said another length of tube, and flowing said heat-carrying fluid by gravity from the upper end of and along both of said lengths of tube downwardly by gravity to and beyond the lower ends of said lengths of tube.



4,343,157
REFRIGERATOR

Kiyoshi Hattori, Aomori, Japan, assignor to Taisei Kogyo Kabushiki Kaisha, Aomori, Japan

Filed May 13, 1980, Ser. No. 149,324
Claims priority, application Japan, May 22, 1979, 54-62225
Int. Cl.³ F25B 13/00
U.S. Cl. 62—160 3 Claims



1. A refrigerator comprising a coolant compressor, a condenser connected at its inlet to the discharge port of said compressor, a liquid receptacle connected at its inlet to the outlet of said condenser via a check valve which can be opened toward said liquid receptacle, a cooler connected at its inlet to the outlet of said liquid receptacle via an expansion valve, flow passages for connecting the outlet of said cooler to the admission port of said compressor, a trap provided between the outlet of said liquid receptacle and the outlet of said cooler via a normally-closed valve, a flow passage for connecting the lower portion of said trap to the outlet of said condenser through a check valve having a small aperture which can be opened toward said condenser, and allows a part of coolant to flow toward said trap, a flow passage having an orifice portion for connecting the lower portion of said trap and the outlet of said trap (17), and a flow passage switching mechanism for shifting, when starting a defrosting operation, the inlet of said cooler from the admission port of said compressor to the dis-

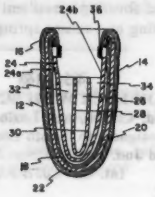
charge port thereof, and the inlet of said condenser from the discharge port of said compressor to the admission port thereof, and for switching said normally-closed valve to open state.

4,343,158

PORTABLE POUCH FOR INSULIN

June H. Campbell, P.O. Box 4162, Foster City, Calif. 94404

Filed Mar. 23, 1981, Ser. No. 246,240
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—372 8 Claims



1. A portable, flexible, insulated, cooling, open-mouth pouch especially adapted and sized for (use in) carrying and storing a vial of insulin to prevent deterioration thereof comprising:

a pair of opposing walls joined to one another (to form) providing a rounded closed bottom for said pouch, each of said walls including an outer wall, an inner wall and a layer of insulating material distributed substantially evenly therebetween;

means for opening and closing said pouch, said means being secured to said pouch in the upper portion thereof around the inner periphery thereof; and

a flexible, water-repellent liner disposed inside said pouch, the upper narrow portion of said liner being attached to said inner wall adjacent the top of said pouch, the major portion of said liner being unattached and disposed adjacent said inner wall, said liner having a front wall, a rear wall, a front partition and a rear partition (forming) constructed to form a central open-top pocket therebetween (for holding) containing a readily removable refrigerating means, the bottom of said pocket (being) disposed adjacent the bottom of said pouch, said front partition (forming) arranged together with said front wall of said liner to form a first insulin-holding compartment (for holding a vial of insulin) and said rear partition (forming) providing together with said rear wall of said liner a second syringe-holding compartment (for holding a syringe).

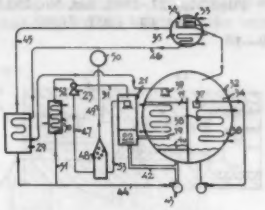
4,343,159

ABSORBER UNITS OF CHILLERS

Isaih Vardi, Rehovot; Yigal Kimchi, Ramat Gan, and Jonathan Ben-Dror, Hadar Am, all of Israel, assignors to Tadiran Israel Electronics Industries, Ltd., Tel Aviv, Israel

Filed May 15, 1980, Ser. No. 150,136
Claims priority, application Israel, May 16, 1979, 57310
Int. Cl.³ F25B *43/04*
U.S. Cl. 62—475 9 Claims

1. In an absorption chiller comprising an absorber, an evaporator, a condenser, and a generator using water as refrigerant and aqueous lithium bromide as absorbant, the improvement which comprises: an absorber vessel having at least one horizontal conduit means extending through the absorber serving as conduits for water, the vessel being subdivided into a plurality of individual compartments by sealing means substantially perpendicular to said conduit means; and a purge line for



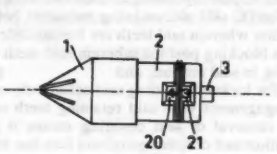
removing non-condensable gases, and means for removing liquid provided in each of the compartments.

4,343,160

ROW COUNTER FOR KNITTING INSTRUMENT

Jacqueline Ponthus born Turquet, Domaine de l'Epine 15, Avenue du Midi, 91760 Itteville, France

Filed Apr. 21, 1980, Ser. No. 142,435
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1980, 8003828[U]
Int. Cl.³ D04B *3/02*
U.S. Cl. 66—1 A 4 Claims



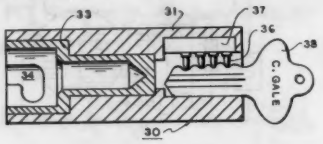
1. A row counter for a knitting instrument having an active end and an inactive end terminating in an enlarged abutment, characterized in that said row counter comprises two mating elements, the first element being formed from an elastic material and comprising a conical part and a first connector part, said conical part having slots therein oriented along generatrices extending to the apex of said conical part to define elastic sectors therebetween adapted to enter into pressing engagement with the knitting instrument when said first element is fitted thereon, said first connector part comprising a hollow cylinder which is open at its outermost end, the second element comprising a receptacle for a counting mechanism, said second element having a second connector part comprising a hollow cylindrical body of a size to be received within said first connector part when said first element is fitted on the knitting instrument and slid to the inactive end thereof with said first connector part facing the inactive end of said instrument, whereby said second element may be attached to said first element from the inactive end of the knitting instrument, a counting mechanism contained in said second element, said second element including a cap engagable with the outer end of said second connector part, an opening in said cap, an operating knob projecting outwardly through the opening in said cap for actuating said counting mechanism, and window means in said second element to permit reading of said counting mechanism.

4,343,161

OUTBOARD MOTOR LOCK

Charles Gale, General Delivery, Block Island, R.I. 02807

Filed May 21, 1980, Ser. No. 151,764
Int. Cl.³ E05B 73/00
U.S. Cl. 70—14 3 Claims



1. A security device for preventing unauthorized use of an outboard motor of the type to which a remote fuel source is connected by coupling of a detachable fuel line to a fuel line coupling on said outboard motor, wherein said fuel line coupling is formed as a hollow post having a pair of oppositely projecting radial retaining teeth thereon, said fuel line including a fuel line coupling connector detachably engageable with said radial retaining teeth on said post; the security device comprising:

covering means for covering said fuel line coupling so as to prevent connection of said fuel line coupling connector thereto, said covering means including a body having a cylindrical aperture therein arranged for overfitting said hollow post and said pair of teeth;

means for selectively engaging said retaining teeth on said hollow post when said covering means is in position on said fuel line coupling, said selectively engaging means including a hollow cylindrical sleeve fit in said socket and having an inside diameter sufficient to accommodate said post but smaller than the span of said teeth and having a pair of oppositely arranged axial cutouts to accommodate said teeth, said sleeve being rotatable between an open position wherein said teeth are free to slide in said cutouts and a blocking position wherein said teeth are block from sliding in said cutouts; and

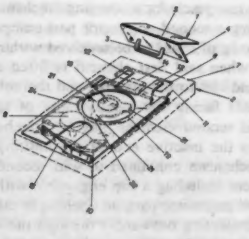
means for lockably holding said selectively engaging means in engagement with said retaining teeth on said post, so that removal of said covering means is prevented and unauthorized connection of said fuel line to said outboard motor is thereby denied.

4,343,162

LOCK WITH A RESILIENT ELEMENT ACTING BOTH AS THE EJECTOR AND AS THE SLIDER RETURN SPRING, FOR BAGS, BRIEF-CASES, SHOULDER BAGS AND THE LIKE

Antonio Giacometti, Varese, Italy, assignor to Siac Industria Accessori Cavaria S.p.A., Italy

Filed Nov. 3, 1980, Ser. No. 203,801
Claims priority, application Italy, Dec. 24, 1979, 23475/79[U]
Int. Cl.³ E05B 65/48
U.S. Cl. 70—67 2 Claims



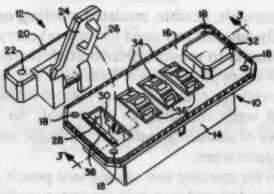
1. A lock for bags, brief-cases, shoulder bags and the like, comprising two components, one being provided with an eyelet, tooth or stirrup and fixed to the rotatable flap of the bag or the like, the other being connected to the fixed part of this latter and provided both with an aperture into which said eyelet is inserted and a knob connected to a slider so as to be able to move this latter against a spring, in order to enable a slider appendix, which acts as the bolt and is situated in a position corresponding with said aperture, to be withdrawn from the eyelet which is inserted into this latter and so enable the bag or the like to be opened, the opening being facilitated by resilient means which tend to eject the eyelet from the aperture into which it is inserted when the bag is closed, wherein the spring and resilient means are replaced by a resilient plate (11) comprising at one end ejector fingers (12) and at the other end an appendix (15) bent at an angle to the plane of the plate (11) and forming a resilient arm which acts on the slider (10), so acting as a return spring.

4,343,163

COMBINATION LOCK WITH SCRAMBLE FEATURE

Stephen S. Scelba, Clifton, and Lazlo Bako, Woodcliff Lake, both of N.J., assignors to Presto Lock, Inc., Garfield, N.J.

Filed Jun. 18, 1980, Ser. No. 160,420
Int. Cl.³ E05B 37/02
U.S. Cl. 70—312 24 Claims



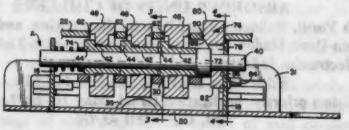
1. A combination lock including a latch adapted to engage a hasp, actuator means for moving said latch from a hasp-engaging position to a disengaging position only when the lock is on-combination, connection means between said latch and said actuator means for permitting movement of said latch out of said hasp-engaging position independently of said actuator means when said latch is disengaged from a hasp, whereby the hasp may be re-engaged with the latch when the lock is off-combination, and blocking means effectively preventing movement of said latch out of said hasp-engaging position independently of said actuator means when the hasp and latch are in engagement.

4,343,164

COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,430
Int. Cl.² E05B 37/02
U.S. Cl. 70—312 9 Claims



1. A combination lock including a plurality of combination elements disposed coaxially on a shaft in a lock casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift member mounted on said shaft adja-

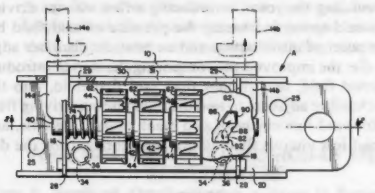
cent a terminal one of said combination elements through an elongated opening in said shift member, said shift member including a manual actuator portion projecting through an opening in the lock casing and said shift member being movable from a rest position substantially transversely to the axis of said shaft by depression of said actuator portion in said opening, said shift member further including a cam surface for moving said elements axially responsive to depression of said actuator portion in said opening by reaction of said shift member with an internal surface of the lock casing, means for releasably retaining the shift member in position when the actuator portion is depressed to hold said elements and said cooperating components out of coupling engagement, and means acting on said cam surface for returning the shift member to the rest position upon release of said retaining means and return of said elements into coupling engagement with said cooperating components.

4,343,165

COMBINATION LOCKS

Lazlo Bako, Woodcliff Lake, N.J., assignor to Presto Lock, Inc., Garfield, N.J.

Filed Jul. 11, 1980, Ser. No. 167,914
Int. Cl.³ E05B *37/02*
U.S. Cl. 70—312 **8 Claims**



1. A combination lock including a plurality of combination elements disposed on a common axis in a casing for axial movement in unison out of coupling engagement with cooperating combination components in order to change the combination of the lock, a shift member for moving said elements axially, said shift member including an actuator portion extending through an opening in said casing and means providing a camming action between said shift member and said casing for causing said shift member to move said elements axially responsive to movement of said actuator portion in said opening, said means including a lock surface extending obliquely to said axis and the shift member being adapted to move along said surface to provide the camming action.

4,343,166

CYLINDER LOCK WITH ASSOCIATED FLAT KEY

Rudolf Hofmann, Eggenburg, Austria, assignor to Bauer Kaba AG., Switzerland

Filed Sep. 9, 1980, Ser. No. 185,878
Claims priority, application Austria, Sep. 11, 1979, 5992/79
Int. Cl.³ E05B *27/06*
U.S. Cl. 70—358 **8 Claims**

1. An improved clyinder lock and key combination, the key being of the type having a shank of substantially rectangular cross section with sides and edge surfaces, the lock being of the type having a stator portion, a rotor portion received and rotatable in the stator portion, a substantially rectangular, axially extending key slot in said rotor, a plurality of rows of longitudinally spaced, radially movable two-part pin tumblers received in said rotor and stator, at least two of said rows lying in planes on opposite sides of said key slot and intersecting each of the longer sides of said key slot, at least one additional third, row of tumblers lying in a plane intersecting a narrow side of said slot and inclined relative to the median plane of the key inserted therein, and wherein the key includes, on each of its flat side surfaces, a row of recesses for receiving tumblers in the rows lying on opposite sides of said slot and a third row of recesses in at least one narrow edge surface thereof the median axes of said recesses in said third row being inclined at the same angle as said additional row of tumblers, the improvement wherein

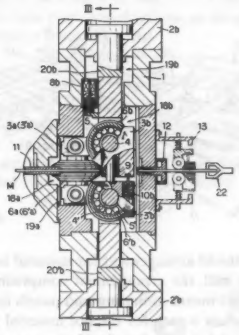
the plane containing the axes of the recesses in said third row of recesses intersects the narrow edge surface of said key adjacent a corner formed by the junction of a flat side surface and an edge surface so that the recesses in said third row open onto both of said side and edge surfaces.

4,343,167

ROLLER-DIES-PROCESSING METHOD AND APPARATUS

Yoshimichi Hasegawa, Nagoya; Osamu Furuta, Tokai; Jouji Shinta, Tokai, and Hideo Nakamura, Tokai, all of Japan, assignors to Aichi Steel Works Ltd., Aichi, Japan

Division of Ser. No. 967,695, Dec. 8, 1978, Pat. No. 4,283,930.
This application Apr. 13, 1981, Ser. No. 253,533
Claims priority, application Japan, Dec. 28, 1977, 52-158482; Jan. 30, 1978, 53-9129
Int. Cl.³ B21B *37/08*
U.S. Cl. 72—8 **23 Claims**



1. An apparatus for manufacturing a long bar from a deformable blank comprising:

(a) multi-tandem type roller dies means including at least

a first set of roller dies, wherein a plurality of idly rotatable rollers having a concave groove on the periphery thereof are disposed in a mutually approachable and departable way along a plane through the rotation axes thereof, and

a second set of roller dies, wherein a plurality of idly rotatable rollers having a concave groove on the periphery thereof are disposed in a mutually approachable and departable way along a plane through the rotation axes thereof parallel to said one plane;

(b) propelling means for forwarding said deformable blank in a longitudinal direction;

(c) roller adjusting means for changing position of each roller of each of said roller dies;

(d) controlling means for outputting electric signals indicating a target distance from a predetermined level line to each roller of each of said roller dies;

(e) roller position sensing means capable of sensing, in each of said roller dies, a distance from said predetermined level line to each of said rollers; and

(f) servo means capable of comparing an actually measured distance by said roller position sensing means and a target distance output from said controlling means for controlling the position of each roller of each of said roller dies, and of designating said roller adjusting means, so as to make the difference between said measured distance and said target distance equal to zero.

4,343,168

HEAT SHIELD ARRANGEMENTS FOR A ROLLING MILL

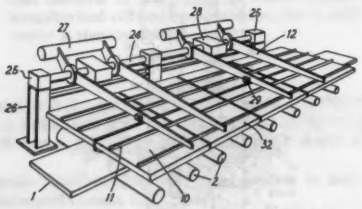
William R. Laws, 19 Tudor Ave., Worcester Park, Surrey, and Geoffrey R. Reed, 8 Beechdene, Tadworth, Surrey, both of England

Continuation-in-part of Ser. No. 902,560, May 3, 1978, abandoned. This application Nov. 6, 1979, Ser. No. 91,752

Claims priority, application United Kingdom, May 4, 1977, 18760/77; Apr. 27, 1978, 16704/78

Int. Cl.³ B21B *43/00, 45/02*

U.S. Cl. 72—10 **21 Claims**



1. A heat shield arrangement for material being processed in a hot rolling mill, the arrangement comprising heat insulating panels, support means mounting said panels in respective series above and below a path for the hot material through the mill, the panels each having a heat insulating core and a cover plate forming or overlying a main face of each panel, said cover plate facing the hot material and forming the hot face of the panel to radiate back heat from the material, displacement means connected to support means of the upper series of panels for lifting the panels away from the material path, sensing means disposed adjacent the material path and responsive to upward distortion or lifting of the material towards the upper series of panels, and control means operated by said sensing means for initiating the operation of said displacement means in dependence upon the response of said sensing means to said distortion or lifting of the material towards said series of panels to avoid contact of the material with the panels and thereby protect the panels against damage by the material.

4,343,169

PROCESS FOR CONTINUOUS HYDROSTATIC EXTRUSION OF METALS THEREFOR

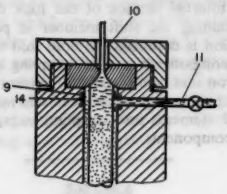
Marc Moreau, Asnieres, France, assignor to Trefimetaux, Clichy, France

Filed Oct. 1, 1979, Ser. No. 81,037

Claims priority, application France, Oct. 12, 1978, 78 29852

Int. Cl.³ B21C *23/32, 29/00*

U.S. Cl. 72—45 **8 Claims**



1. In a process for the continuous hydrostatic extrusion of an indefinite length blank from a first cross-section to a reduced cross-section comprising the steps of passing said blank lengthwise into the space between a peripherally grooved rotor and a stator having a spiral shaped interior fixed with a relation to and surrounding the rotor, introducing a first viscous driving fluid into said space, increasing the pressure of said fluid between its point of introduction and an isostatic chamber adjacent to a die; the improvement comprising the step of introducing a second fluid, less viscous than said first fluid, into the isostatic chamber adjacent to said die, said viscous driving fluid causing forward movement of said blank toward said die, and said second less viscous fluid acting as a lubricant for the die.

4,343,170

APPARATUS FOR EXPANDING TUBULAR MEMBERS

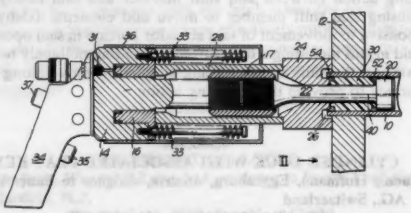
Peter F. Hufton, Etwall, England, assignor to Northern Engineering Industries Limited, Newcastle upon Tyne, England

Filed Jan. 22, 1981, Ser. No. 227,361

Claims priority, application United Kingdom, Feb. 14, 1980, 8004986

Int. Cl.³ B21D *22/10*

U.S. Cl. 72—61 **9 Claims**



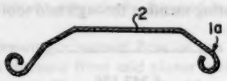
1. Apparatus for expanding tubular members comprising an annular body of elastomeric material, means operable to apply a load to said body parallel to the central longitudinal axis thereof to compress said body and to expand same radially against one said tubular member, said body comprising end portions of reduced diameter, said apparatus further comprising two support means, respectively arranged about said end portions, each said support means comprising a closed annular array of pieces, each said piece having surfaces which slidably engage respective surfaces of adjacent pieces to allow the respective array to expand radially while remaining closed without any gap arising between said engaged surfaces, said pieces being arranged so that said engaged surfaces are forced together by said load.

4,343,171

APPARATUS FOR MANUFACTURING A SLAT FOR A SHUTTER

Tokiyoshi Kagawa, Tokyo, Japan, assignor to Sanwa Shutter Corporation, Tokyo, Japan

Filed May 29, 1980, Ser. No. 154,128
Claims priority, application Japan, May 7, 1980, 55-59483
Int. Cl.³ B21B *15/00*
U.S. Cl. 72—181 4 Claims



1. An apparatus for manufacturing a slat for a shutter, said slat having longitudinal ribs, comprising:

a plurality of forming rolls comprising stages successively disposed along the path line of a metal sheet to form the metal sheet into a predetermined slat configuration; and

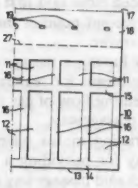
a pair of pattern embossing rolls, having upper and lower driving shafts, disposed along said path line at the last of said stages, at least one of said pattern embossing rolls having embossing patterns thereon to produce corresponding patterns on a surface of said slat, the patterns being formed on the flat surface provided between the longitudinal ribs of said slat, said upper and lower driving shafts of the pattern embossing rolls being rotated only by the slat passing therebetween.

4,343,172

TOOL HOLDERS AND A METHOD OF THEIR MANUFACTURE

Sven P. Nordlund, Ostvik, Sweden, assignor to Svenor Modul-System AB, Lulea, Sweden

Filed Sep. 18, 1979, Ser. No. 76,599
Claims priority, application Sweden, Sep. 19, 1978, 7809819
Int. Cl.³ B21D *53/00*
U.S. Cl. 72—339 12 Claims



1. A method of manufacturing a tool holder, comprising the steps of:

(a) producing a strip of material;

(b) forming in said strip in the longitudinal direction thereof at least two mutually parallel rows of rectangular tool-receiving apertures spaced from one longitudinal edge of said strip, the apertures of one row being located immediately opposite respective apertures of an adjacent row and the transverse length of the apertures in one row being greater than the transverse length of the apertures in said adjacent row, while the longitudinal length of the apertures of said rows are equal, and said apertures being defined by at least three defining bars which are integral with the strip and the width of which is small in comparison with the smallest width of any aperture; and

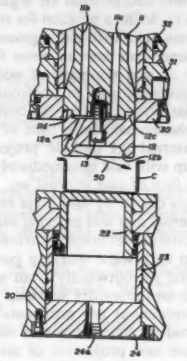
(c) folding a portion of said strip located between said one longitudinal edge and the row of apertures nearest said edge to form a mounting flange substantially at right angles to the plane of said nearest row.

4,343,173

DOUBLE ACTION CUPPER HAVING IMPROVED CAN REMOVAL MEANS

Joseph D. Bulso, Jr., and William R. Lewers, both of Canton, Ohio, assignors to Redicon Corporation, Canton, Ohio

Filed Jul. 24, 1980, Ser. No. 171,905
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 7 Claims



1. Apparatus for forming containers for use in a press having a base and a movable platen reciprocal with respect to the base, comprising:

(A) at least one blank and draw die carried by the base of the press;

(B) at least one draw horn carried by the movable platen for movement into and out of said blank and draw die to form the container;

(C) means carried by the base of the press to lift the formed container out of said blank and draw die; and

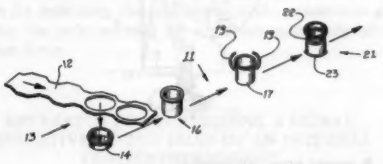
(D) removal means carried by said draw horn for moving the formed container in a direction substantially normal to the direction of movement of said draw horn upon movement of said draw horn out of said die to thereby expel the formed container from the press.

4,343,174

BEADING DIE FOR CAN BODIES

Kurt L. Hahn, San Rafeal; Howard J. Padgett, Sunnyvale, both of Calif., and Manjeshwar S. Rao, Hoffman Estates, Ill., assignors to American Can Company, Greenwich, Conn.

Filed Nov. 1, 1979, Ser. No. 90,498
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—349 2 Claims



1. A press for making a body of a two-piece can from metallic strip of the type wherein a blanking and drawing station is provided to form a cup from said strip and wherein additional forming stations are provided to generate an elongated can body of reduced diameter from said cup, the improvement, an additional station comprising:

(a) a set of internal die segments, each segment having an outer face and an inner face with a first end and a second

end and wherein the outer face proximate the first end is provided with a projection and wherein said projections on said segment faces align one with the other to substantially form an annular projection for chime bead embossment and wherein said outer faces of said segments are further contoured to include recessed areas intermediate said first end and said second end for body bead embossment;

(b) a first set and a second set of external die segments disposed around said internal die segments and spaced apart therefrom to define a position for receiving said can body and wherein said external segments are each provided with an inner face and an outer face and wherein said inner face of said segments of said first external set includes a recessed area in confronting relationship with said annular projections on the outer face of said internal set and wherein said inner face of said segments of said second external set include projections in confronting relationship with said intermediately disposed recesses on said outer face of said internal set;

(c) cam means driven by said press and operably connected to said internal and said external die segments to advance said first external set inwardly from an outward receiving position to an inward working position and to advance said internal set outwardly from an inwardly receiving position to an outwardly working position wherein said internal projections are proximate said recesses of said first external set but where said internal set recesses are intermediate said projection of said second external set and to advance said second external set inwardly from an outward receiving position to an inward working position wherein said second external set projections are proximate said internal recesses; and

(d) can support seat in vertical alignment with said die segments to advance and retreat in cooperation with said cam means whereby a can body mounted on said support seat is advanced by the stroke of said press into said can receiving position and therein centered and axially supported for chime and body bead embossment.

4,343,175

POWER PRESS

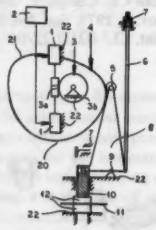
Alexander S. Petrov, Sofia, Bulgaria, assignor to Vmei "Lenin" - Centar Po Robotika, Sofia, Bulgaria

Continuation of Ser. No. 36,086, May 4, 1979, abandoned. This application Apr. 15, 1981, Ser. No. 254,301

Claims priority, application Bulgaria, May 5, 1978, 39637

Int. Cl.³ B21J *9/18*

U.S. Cl. 72—452 **4 Claims**



1. A power press comprising:

a press tool adapted to engage a workpiece for plastically deforming same;

a cam provided with force-storing and force-delivering sections;

a cam follower engageable with said cam and displaceable in accordance with the contour thereof;

at least one low-inertia motor operatively connected to said cam for driving same;

a resilient force-storing member operatively connected to said cam follower and stressed during engagement of said cam follower with said force-storing section of said cam and relieved upon engagement of said cam follower with said force-delivering section of said cam to operate said tool, said force-storing member being operatively connected to said tool; and

control means connected to said motor for controlling the speed of said motor whereby said control means at least in part controls the rate at which stored force is applied by said force-storing member through said tool to said workpiece.

4,343,176

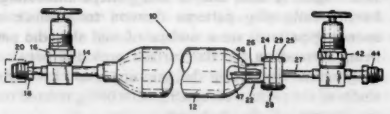
LONG-LIFE LEAK STANDARD ASSEMBLY

James A. Basford; John E. Mathis, and Harlan C. Wright, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 12, 1980, Ser. No. 206,222

Int. Cl.³ G01N *1/00*; G12B *13/00*

U.S. Cl. 73—1 G **5 Claims**



1. A portable leak standard for providing a stream of gas at a preselected and virtually uniform flow rate comprising:

a reservoir for retaining said gas under pressure with said reservoir having a sufficient volume therein to retain said gas at essentially a constant pressure over a relatively extensive period for maintaining said stream of gas at said virtually uniform flow rate,

first conduit means in registry with said reservoir for conveying said gas into the reservoir,

first valve means in said conduit means for selectively closing or opening the latter,

second conduit means in registry with said reservoir at a location thereon spaced from said first conduit means,

flange means on said second conduit means at a location spaced from said reservoir,

a metal discoidal body having a passageway therethrough affixed to said flange means for sealing said second conduit means and preventing flow of gas from said reservoir except through said passageway,

a metal gas flow restricting means operatively associated with said passageway for providing a flow of gas from said reservoir through said passageway at said preselected flow rate, and

second valve means in said second conduit means for selectively interrupting or establishing the flow of gas at said preselected flow rate through said passageway.

4,343,177

FLOW COMPENSATED GAS COMPARISON PROBE

Hugh R. Carlon, Bel Air, and Bernard V. Gerber, Randallstown, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 7, 1980, Ser. No. 204,744

Int. Cl.³ G01F *13/00*

U.S. Cl. 73—23 **12 Claims**

1. A gas probe for sensing a characteristic of a gas near a planar surface comprising:

a first well chamber;

a first gas sensor operatively disposed in said first well chamber;

means for drawing a first flow of gas across said planar

surface and impinging said first flow of gas on said first gas sensor which includes;

a cylindrical hoising having a bottom section threadably connected to an upper section;

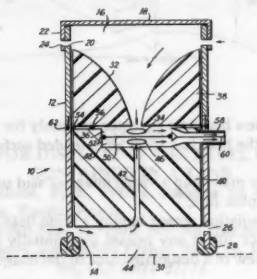
a lower block member having a central channel disposed in said bottom section, said central channel communicating with a gas flow chamber adjacent to said planar surface and with said first well chamber;

a second well chamber;

a second gas sensor operatively disposed in said second well chamber;

means for drawing a second flow of gas originating at a substantial distance from said planar surface and impinging said second flow of gas on said second gas sensor, which includes;

an upper block member operatively disposed in said upper section of said housing, having a venturi shaped upper



flow directing surface which permits said second flow of gas to communicate with said second well chamber;

means for isolating said first and second flows of gas, which includes;

a nipple member transversly disposed through a wall of said housing and positioned intermediate said lower section and said upper section of said housing, further including;

a first septum member longitudinally disposed in said nipple member for isolating said first and second flows of gas from each other;

second septum means operatively disposed intermediate said lower and upper section members cooperating with said first septum member for pneumatically isolating said first and second gas sensors; and

means for independently varying at least one of said first and second flows of gas whereby outputs of said first and second gas sensors may be calibrated.

4,343,178

KNOCKING DETECTOR

Yoshida Kenichi, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 9, 1980, Ser. No. 195,628

Claims priority, application Japan, Oct. 11, 1979, 54-131224; Nov. 16, 1979, 54-148456; Mar. 26, 1980, 55-38721

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—35 **12 Claims**

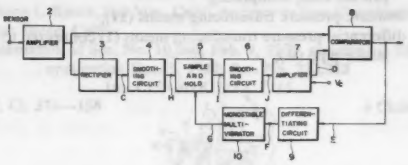
1. A knocking detector for an engine, comprising:

(a) means for sensing vibration of the engine as an alternating current signal;

(b) means for rectifying the output of said sensing means;

(c) means for smoothing the output of said rectifying means;

(d) means for comparing the output of said smoothing means with the output of said sensing means; and



(e) means responsive to the output of said comparing means for cutting off supply of the rectified signal to said smoothing means during knocking.

4,343,179

UTILITY POLE HARDNESS TESTER

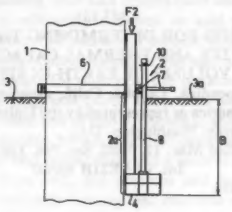
Göta L. Aström, 12 Lämmeltaget, Lulea, Sweden (S-951 46), and Sigvard N. Johansson, 30 Söderbyvägen, Västerhaninge, Sweden (S-137 80)

Filed Nov. 25, 1980, Ser. No. 210,260

Claims priority, application Sweden, Nov. 27, 1979, 7909777; Nov. 17, 1980, 8008054

Int. Cl.³ G01N *3/48*

U.S. Cl. 73—81 **14 Claims**



1. A device for testing the hardness or rot depth of a pole, comprising a frame portion, a penetration portion cooperating with the frame portion for penetrating into the pole material in response to an actuation force, actuator means exposed to actuations for producing the actuation force for the penetration portion, the frame portion includes a part which can be driven or sunk into the ground base of the pole adjacent the pole, the penetration portion being arranged on said part, said actuator means, when the part of the frame portion is driven entirely or partially into the ground base, including upper portions that extend above the ground surface so that said actuations can be applied for producing said actuation force, and indicating means arranged at an upper part of the frame portion for indicating the penetration of the penetration portion into the pole material for a definite magnitude of the actuation force.

4,343,180

APPARATUS FOR FURNISHING A SIGNAL INDICATIVE OF THE LOAD OF AN INTERNAL COMBUSTION ENGINE

Werner Herden, Stuttgart, and Hans Neu, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 18, 1980, Ser. No. 160,599

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1979, 2932336

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—115 **14 Claims**

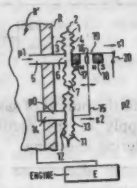
1. In an internal combustion engine having an intake pipe

and means for controlling the fuel supply in accordance with the then-present load on said internal combustion engine,

apparatus for furnishing a load signal indicative of said then-present load, comprising

absolute pressure transducing means (11);

differential pressure transducing means (1) connected to said intake pipe (R);



means (17) for generating a magnetic field varying in accordance with the pressure sensed by at least one of said pressure transducing means including a first magnet and a second magnet, said magnets being so arranged that a pole of said second magnet faces a pole of the first magnet of the same polarity; and

Hall generator means mounted in said magnetic field for generating an output signal varying as a function thereof, said output signal constituting said load signal.

4,343,181

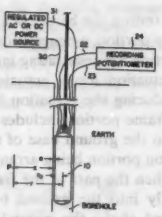
METHOD FOR DETERMINING THERMAL CONDUCTIVITY AND THERMAL CAPACITY PER UNIT VOLUME OF EARTH IN SITU

Heinz F. Poppendiek, LaJolla, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 11, 1980, Ser. No. 129,300

Int. Cl.³ E21B *49/00*

U.S. Cl. 73—154 **6 Claims**



1. A method of determining thermal conductivity and capacity parameters of each in situ using a probe in a borehole, said probe comprising a long cylindrical tube having means for measuring the temperature gradient along said tube, and means for surface heating one zone of said tube, comprising the steps of

positioning said probe in said borehole, wherein said probe has a tube of outside diameter sufficiently less than the diameter of the borehole to facilitate lowering the probe into position, thus leaving a fluid annulus between the probe tube and the borehole wall,

allowing said probe to remain in position for a period sufficient for said temperature gradient to reach thermal equilibrium,

applying a known step function of heat through said surface heating means at said one end of said probe tube,

recording the change in thermal gradient along said probe tube as a function of time in response to said step function of applied heat, said thermal gradient being recorded as a rise in temperature above the temperature at thermal equilibrium, and

relating the recorded rise in temperature as a function of time during heating to the thermal conductivity and thermal capacity per unit volume of the surrounding earth.

4,343,182

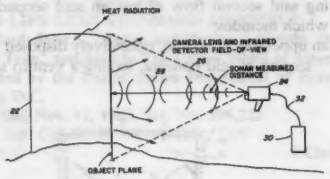
RADIATION HEAT LOSS DETECTOR

Francesco Pompei, Wayland, Mass., assignor to Exergen Corporation, Wayland, Mass.

Filed Jul. 14, 1980, Ser. No. 168,532

Int. Cl.³ G01K *17/00*

U.S. Cl. 374—31 **23 Claims**



1. A radiation heat loss detector assembly for providing an indication of the heat loss from an extended surface area comprising:

a camera for providing a visual image of said surface area on photographic film;

a thermal radiation sensor having a wide field of view of at least about 20° at any instant substantially matching the field of view of a designated area of the image recorded on the film;

display means responsive to the output of the radiation detector for providing an illuminated display indicative of the radiation heat loss from said extended surface area; and

means for recording a visual image of the display with the image of the surface area on the photographic film.

4,343,183

APPARATUS FOR MEASURING AIR FLOW IN THE AIR INTAKE MANIFOLD OF AN INTERNAL COMBUSTION ENGINE

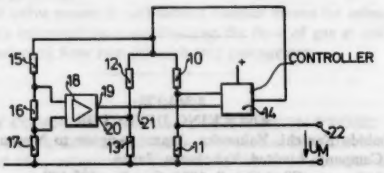
Günther Plapp, Filderstadt, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 4, 1980, Ser. No. 118,018

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1979, 2906847

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—204 **17 Claims**



1. An apparatus for measuring the air flowing through the intake manifold of an internal combustion engine having a bridge circuit comprising at least four resistors, of which at least one is disposed in the air flowing in the air intake manifold, and having a controller for the electric current flowing through the bridge circuit, wherein the at least four resistors of the bridge circuit are connected to form two parallel resistive

paths, each path having an intermediate connection point, and the controller is connected to receive a bridge circuit signal produced across the bridge intermediate connection points, characterized in that the apparatus includes a temperature signal generating means for generating a temperature signal pertaining to the temperature of the air flowing in the air intake manifold, and the controller is also connected to receive the temperature signal, wherein the temperature signal generating means comprises:

temperature sensing means for generating an output signal which is a function of the temperature of the air flowing in the air intake manifold; and

differentiation signal processing means, connected to receive the output signal of the temperature sensing means, for supplying the temperature signal to the controller, wherein the temperature signal is a function of the rate of change of the output voltage of the temperature sensing means with respect to time.

4,343,184

DEVICE FOR DISPLAYING THE LEVEL OF FLUID CONTAINED IN A TANK

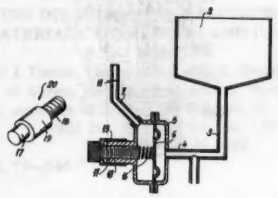
Christian Jaulmes, Paris, France, assignor to Atleliers de la Motobecane, Pantin, France

Filed May 13, 1980, Ser. No. 149,532

Claims priority, application France, May 23, 1979, 79 13160

Int. Cl.³ G01F *23/16*

U.S. Cl. 73—299 **6 Claims**



1. In a device for displaying level of a fluid of a tank, the device including a housing, a single membrane positioned within the housing to separate said housing into a first chamber and a second chamber, communicating means for providing fluid communication between the tank and the first chamber of the housing, a pipe at least a portion of which is transparent or translucent, in fluid communication with said second chamber of the housing and a display liquid of given substantially fixed volume within said pipe, said fluid of said tank and said display liquid both being bounded in part by said single membrane, the improvement comprising

means to determine the level of fluid in the tank by adjusting the position of said membrane and thereby bringing the level of the display liquid to a given position in said pipe, said means comprising spring means within said second chamber of said housing in contact with said membrane on that side thereof which is in contact with said display liquid, a nut fixed to said housing on the second chamber side thereof, a screw extending through said nut into said second chamber of said housing and in contact with said spring means to adjustably compress said spring means to adjust the position of said membrane and to thereby bring the level of the display liquid to the given position, and index means on said nut for determining instant relative position of said screw with respect to said nut to provide a reading of the level of fluid in the tank.

4,343,185

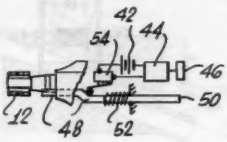
TEMPERATURE SENSING PROBE AND DISPOSABLE PROBE COVER

Wallace L. Knute, Del Mar, Calif., assignor to Ivac Corporation, San Diego, Calif.

Continuation of Ser. No. 10,540, Feb. 9, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,313

Int. Cl.³ G01K *1/16, 7/16*

U.S. Cl. 374—158 **6 Claims**



1. A temperature sensing device including a sensing probe and a removable probe cover, said device comprising:

an elongated probe shaft having a temperature sensor at a distal end thereof and being rigidly secured to a handle at a proximal end thereof; and

a substantially rigid tubular cover, separate from the structure defining said probe, said cover having an open proximal end adjacent said handle and a closed distal end in tight engagement with said temperature sensor, whereby said cover is releasably mounted on said probe by said tight engagement of said cover on said sensor;

said device further characterized in that said handle includes a movable means for engaging the proximal end of said cover and urging said cover away from said handle and toward the distal end of said probe shaft, and said movable means is movable between a first position toward said distal end of said probe shaft and a second position away from said distal end, and wherein said handle includes means for resiliently biasing said movable means toward said first position, said movable means being held in said second position, against the urging of said biasing means, by the tight engagement of said cover on said sensor.

4,343,186

VIBRATION PICKUP

Herbert Schnapp, Muelldorf, Fed. Rep. of Germany, assignor to Interatom Internationale Atomreaktorbau GmbH, Bergisch Gladbach, Fed. Rep. of Germany

PCT No. PCT/EP79/00026, § 371 Date Feb. 28, 1980, § 102(e) Date Feb. 28, 1980, PCT Pub. No. WO80/00187, PCT Pub. Date Feb. 7, 1980

PCT Filed Apr. 19, 1979, Ser. No. 192,516

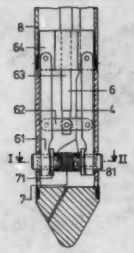
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828541

Int. Cl.³ G01H *1/04*

U.S. Cl. 73—649 **4 Claims**

1. Device for performing vibration measurement of parts, having at least one measuring instrument making contact with a measuring point under spring load, and a manipulating device operatively associated with the measuring instrument for bringing the latter to the measuring point comprising means for retracting the measuring instrument into the manipulating device while the measuring instrument is brought to the measuring point by the manipulating device, the measuring instru-

ment being detachable from the manipulating device, except for yieldable connections, during vibration measurement at the



measurement point, the measuring instrument having means for firmly fixing the position thereof at the measuring point.

4,343,187

SENSOR WITH INNER PROTECTIVE CHAMBER

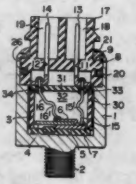
Kiyokane Kaji, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 23, 1980, Ser. No. 162,101

Claims priority, application Japan, Aug. 15, 1979, 54-104300; Aug. 15, 1979, 54-104301

Int. Cl.³ G01L *23/22*

U.S. Cl. 73—654 **20 Claims**



1. A sensor for sensing a condition of a body, comprising:

an outer hollow tubular sensor casing, a first end of which is open and a second end of which is closed and is provided on its outside side with a protuberance adapted for connection to the body;

an end closing member which closes the first open end of the outer hollow tubular sensor casing, and is fixedly mounted thereto;

a sensor element for producing an electrical output signal, mounted within the outer hollow tubular sensor casing;

a sensor element side protective member, passing all around the sensor element between it and the inner wall of the outer hollow tubular sensor casing;

a sensor element base end protective member, between the sensor element and the second closed end of the outer hollow tubular sensor casing;

a sensor element other end protective member defining an end of the substantially closed sensor element protective chamber remote from the second closed end of the outer hollow tubular sensor casing;

the sensor element side protective member, the sensor element base end protective member, and the sensor element other end protective member are formed as separate members, and are all clamped together between the end of the end closing member closest to said second closed end of the outer hollow tubular sensor casing, and the inside side of the second closed end of the outer hollow tubular sensor casing, the side of the end closing member closest to the second closed end abutting the side of the sensor element other end protective member remote from the second closed end, the side of the sensor element other end protective member closest to the second closed end abutting the end of the sensor element side protective member remote from the second closed end, the end of the sensor element side protective member closest to the second closed end abutting the side of the sensor element base end protective member remote from the second closed end, and the side of the sensor element base end protective member closest to the second closed end abutting the inside surface of the second closed end; and

an electrically conducting sensor lead structure, connected at its one end to the sensor element for receiving a sensor output electrical signal therefrom, and passing through an aperture in the end closing member to the outside of the sensor.

4,343,188

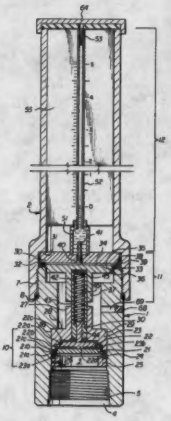
FLUID PRESSURE INDICATING APPARATUS

William E. Baker, 10627 Sugar Hill, Houston, Tex. 77042

Filed Aug. 27, 1980, Ser. No. 181,755

Int. Cl.³ G01L *71/16*

U.S. Cl. 73—706 **44 Claims**



1. Fluid pressure indicating apparatus comprising:

body means adapted for connection to a source of fluid pressure and having an inlet in fluid communication therewith;

indicator means attached to said body means for indicating the magnitude of said fluid pressure;

transducer means carried by said body means and one side of which is in fluid communication with said source of fluid pressure through said inlet, said transducer means translating pressure applied to said one side thereof from said source of fluid pressure to linear motion at said opposite side thereof;

amplification means carried by said body means between said transducer means and said indicator means for amplifying said linear motion at said opposite side of said transducer means to increased motion of said indicator means in predetermined relationship with the magnitude of said fluid pressure; and

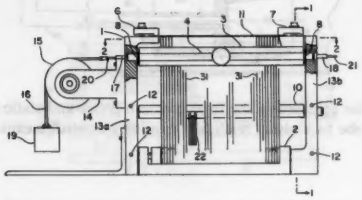
said transducer means comprising at least one circular plate member, one side of which is exposed to said source of fluid pressure, the opposite side of which faces said amplification means, and the periphery of which is relieved to form an annular surface for bearing against a corresponding annular support shoulder within said body means, said annular surface substantially coinciding with the neutral stress surface of said plate member when subjected to bending forces from exposure of said one side thereof to said source of fluid pressure.

4,343,189

METHOD AND APPARATUS FOR EDGEWISE COMPRESSION TESTING OF FLAT SHEETS

Dennis E. Gunderson, Madison, Wis., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 23, 1980, Ser. No. 152,874
Int. Cl.³ G01N *11/00*
U.S. Cl. 73—822 16 Claims



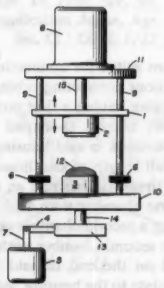
1. An apparatus for edgwise compression testing of a flat sheet, comprising: (a) means for restraining said sheet from buckling in the lateral direction, comprising: (1) a sheet-supporting surface, flexible in the directions of test loading, on one side of said sheet; and (2) air pressure on the unsupported side of said sheet exceeding that on the supported side of said sheet; (b) means for holding said sheet adjacent to said restraining means during testing; and (c) means for placing a load on said sheet in a desired direction.

4,343,190

MOVING DIE RHEOMETER, METHOD OF TESTING MATERIALS THEREWITH, AND DIE FOR USE THEREIN

Michael J. Danko, Uniontown; Leslie L. Randall; Ray J. Smith, both of Akron, and James E. Walsh, North Canton, all of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 2, 1980, Ser. No. 155,883
Int. Cl.³ G01N *3/24*
U.S. Cl. 73—846 39 Claims



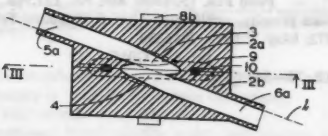
14. Apparatus for testing rheological properties of viscoelastic material comprising, in combination, a die having two opposing faces and annular wall means attached to at least one of said faces, annular sealing means arranged to contact said wall means, said faces wall means and sealing means defining a closed space, each face having at least one annular protrusion extending therefrom toward the opposing face, the annular protrusions from one face intermeshing with the annular protrusions from the opposing face, means biasing said faces towards one another, means for rotating one of said faces with respect to the other, and measuring means for measuring rheological properties of a viscoelastic material contained in said die.

4,343,191

FLUID FLOW METER

Runo M. J. Cairenius, 195 Kennedy Rd. South, Ste. 309, Brampton, Ontario, Canada (L6W 3H2)

Filed Jun. 11, 1980, Ser. No. 158,526
Int. Cl.³ G01F *1/70*
U.S. Cl. 73—861.05 3 Claims



1. A fluid flow transducer comprising

two housing halves of impervious material both having a groove of circular shape and of semicircular cross-section, said grooves forming a toroidal passageway for fluid in said housing when combined, one orifice in each said housing half at the bottom of said groove, said orifices being, when said housing halves combined, located on opposite sides of said passageway and being off-set from the exact opposite location by one full revolution of said combined housing halves less one distance of the orifice diameter, one connection means for fluid on the outside of each said housing half connected to said corresponding orifice in parallel direction that is less than 45 degrees but more than 5 degrees to the plane defined by the center line of said toroidal passageway, characterized in that the cross-sectional areas of said toroidal passageway, said orifices and said connection means are equal or nearly equal,

a ball slightly smaller than the inner diameter of said passageway,

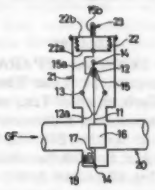
fastening means to form a fluidtight enclosure of said two housing halves, whereby the motion of said ball indicates the velocity of fluid.

4,343,192

FLOW RATE MEASURING INSTRUMENT

Takao Shimomura, Takaishi, Japan, assignor to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Feb. 27, 1980, Ser. No. 124,970
Claims priority, application Japan, Mar. 2, 1979, 54-23382
Int. Cl.³ G01F *1/20*
U.S. Cl. 73—861.21 7 Claims



1. A flow rate measuring instrument comprising: an oscillation assembly which self-oscillates in response to the flow condition of a fluid, said oscillation assembly having a component which is of fixed dimensions which interacts with the fluid to generate the self-oscillation; and

a mechanism for adjusting the moment of inertia of the oscillation assembly in response to the variations in the

flow condition of the fluid, thereby performing a correction of a detected flow rate of the fluid.

4,343,193

FLUID FLOW MEASURING APPARATUS

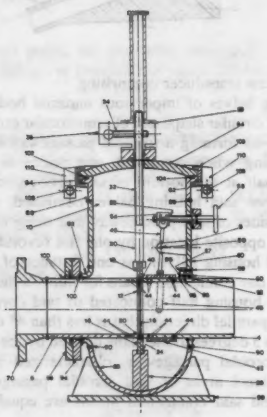
Raymond W. Dawson, 47, Ingle Head, Fulwood, Preston, Lancs.; Anthony W. Stevenson, Woodley, and Ernest Manners, London, all of England, assignors to Raymond Winston Dawson, Preston, England

Filed Feb. 15, 1980, Ser. No. 121,988

Claims priority, application United Kingdom, Feb. 17, 1979, 7905672; May 2, 1979, 7915336

Int. Cl.³ G01F *1/42*

U.S. Cl. 73—861.61 **7 Claims**



1. Fluid flow measuring apparatus comprising first and second pipe portions, a housing positioned around the pipe portions, a chamber in the housing, an orifice plate, orifice plate moving means for moving the orifice plate from a first position in which it is located between the pipe portions to a second position in which it is located in the chamber in the housing and for moving the orifice plate from the second position to the first position, and sleeve sealing means for sealing the pipe portions when the orifice plate is in the second position, the housing being fabricated of metal in sheet and/or tubular form, the housing having a pivotable lid, and the orifice plate moving means being such that it can be pivoted to an inoperative position for allowing access to the orifice plate.

4,343,194

FLOW SENSING APPARATUS

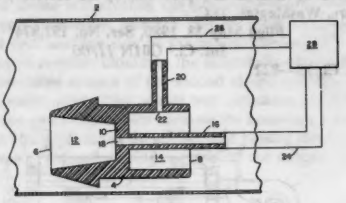
Marv L. Dehart, Mesquite; M. Leon Kloostra, Rowlett, and Harold E. Straub, Garland, all of Tex., assignors to Environmental Elements Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 849,403, Nov. 7, 1977. This application Apr. 8, 1980, Ser. No. 121,726

Int. Cl.³ G01F *1/46*

U.S. Cl. 73—861.65 **4 Claims**

1. A gas flow sensing device comprising a tube having an upstream end and a downsteam end and having an opening at each end thereof, a wall dividing the tube into an upstream chamber and a downstream chamber, a total pressure sensing probe located in the tube and having its opening in the center of the wall dividing the tube into the upstream and downstream chambers and facing upstream, a static pressure sensing probe located in the walls of the downstream chamber of the tube and having its opening perpendicular to the flow of gas,



means for connecting the total pressure probe and static pressure probe to a visual readout means or a control means.

4,343,195

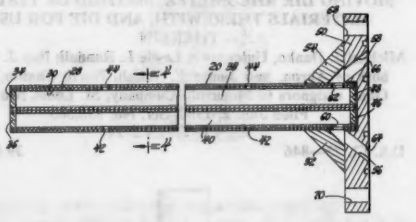
FLOW MEASURING DEVICE

Michael Victor, 41226 I-94 Expressway Service Dr., Van Buren Township, Wayne County, Belleville, Mich. 48111, and James R. Bowers, 1471 Lakeview Ave., Rocky River, Ohio 44116

Filed Jul. 21, 1980, Ser. No. 170,681

Int. Cl.³ G01F *1/46*

U.S. Cl. 73—861.66 **7 Claims**



1. Pitot tube means suited for connecting a pressure responsive instrument without connecting tubing, comprising:

an elongated housing having a first port and a second port;

a pair of similarly shaped D-shaped tubes telescopically disposed back-to-back in said housing and extending substantially the full length of said housing, including a first tube having a first chamber and an opening fluidly connecting said first chamber with said first port, and a second tube having a second chamber and an opening fluidly connecting the second chamber with the second port;

a plate mounted on the end of said housing, and means attaching said plate to the housing, said plate having a pair of passages diverging from the housing and extending from one side of the plate to the opposite side thereof, the outer ends of said passages being spaced a distance greater than the diameter of the housing;

one of said passages being fluidly connected to the first fluid chamber and the second of said passages being fluidly connected to the second fluid chamber;

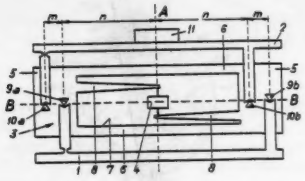
said plate having a flange, and opening means for receiving fastener means, said plate being adapted to be mounted in face-to-face relationship with the flange of instrument means without tubing being disposed between the plate and the instrument.

4,343,196

MASS AND FORCE METER

Johannes Wirth, and Mario Gallo, both of Zurich, Switzerland, assignors to Wirth, Gallo & Co., Zurich, Switzerland

Filed Sep. 9, 1980, Ser. No. 185,418
Claims priority, application European Pat. Off., Aug. 25, 1980, 80105032.9
Int. Cl.³ G01L 1/04
U.S. Cl. 73—862.62 4 Claims



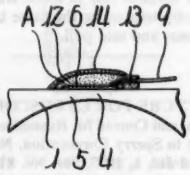
1. In a mass and force meter a body, a load support, a load cell, an intermediate body mounted between said body and said load support and comprising two rigid parts linked to each other by two horizontal, flexible parts mounted one below the other, a number of loading points anchored to said rigid parts, a same number of supporting points anchored to said rigid parts, said loading points and said supporting points being mounted pair-wise in the same horizontal plane, said loading points being shifted horizontally by the same amount and in the same direction from said supporting points, said intermediate body being supported by said body over said supporting points, said load support being supported by said intermediate body over said loading points, at least one spring with two ends the resilience of which is much greater than that of said flexible parts, said spring having one of its ends fitted into one of said rigid parts and its other end being linked to said load cell, the latter being linked to the other of said rigid parts.

4,343,197

LOAD-CELL BALANCE

Seiji Suzuki; Kohichiro Sakamoto, and Tohru Kitagawa, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 14, 1980, Ser. No. 139,645
Claims priority, application Japan, Apr. 19, 1979, 54-47242
Int. Cl.³ G01L 1/22
U.S. Cl. 73—862.65 5 Claims



1. A load-cell balance comprising: a load cell body having a parallelogram form constituted by a stationary column, a movable column holding a load support and two arms through which said stationary and movable columns are connected to each other at their upper and lower ends, each of said arms having thin-walled flexible portions; strain gauges including lead wires, said strain gauges being adhered to said flexible portions; a spacer made of a material of a butyl rubber group and interposed between said lead wires of each strain gauge and a corresponding flexible portion and a coating of a material of butyl rubber group adapted to coat and seal said spacer and said strain gauge.

4,343,198

FLUID FORCE TRANSDUCER

Joseph A. Jendrzejczyk, Warrenville, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 9, 1980, Ser. No. 214,801
Int. Cl.³ G01L 5/16, 1/22
U.S. Cl. 73—862.65 11 Claims

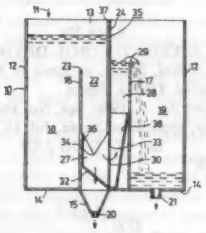
1. A force transducer for use with a bridge circuit means for sensing changes in strain gauge means comprising:
support tube means;
a rod positioned longitudinally within said support tube;
first and second support means for securing the respective ends of said rod under tension to said tube;
a sleeve extending about said support tube and rigidly connected to said rod; and
circuit means including strain gauge means attached to said rod for measuring stress in said rod.

4,343,199

SAMPLING DEVICE

G. Sigvard Sunna, Skelleftea, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

PCT No. PCT/SE79/00242, § 371 Date Aug. 4, 1980, § 102(e) Date Jul. 1, 1980, PCT Pub. No. WO80/01205, PCT Pub. Date Jun. 12, 1980
PCT Filed Nov. 30, 1979, Ser. No. 200,493
Claims priority, application Sweden, Dec. 4, 1978, 7812470
Int. Cl.³ G01N 1/20
U.S. Cl. 73—863.43 5 Claims



1. A device for taking from a flowing suspension a sample-flow which is of substantially constant flow rate and which is representative of the composition of said suspension, said device being of the kind which comprises a first chamber arranged to receive the flowing suspension and which communicates via a weir with the upper part of a second chamber having first and second openings arranged at the bottom thereof for the removal of the sample-flow and the remaining part of the suspension respectively, said openings being separated from one another by partition walls which extend transversely of said weir over the whole length of the second chamber; and in which the second openings communicate with an outlet via a substantially U-shaped passage and a second weir whose lip is located substantially on the same level as the lip of the weir of the first chamber, while the first openings communicate with a second outlet which is so adapted that with normal flow of the suspension entering the first chamber the flow rate of said suspension into the first openings is substantially equal to the flow rate of said suspension into the second openings, at least one of said partition walls defining communication between the U-shaped passage and said second outlet in

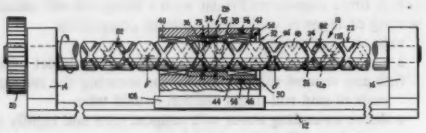
a region located lower than the uppermost level of the two legs of the U-shaped passage.

4,343,200

REVERSING ATTACHMENT FOR DIAMOND THREAD SCREW

James Alworth, Rte. 58, West Redding, Conn. 06896; John C. Kennedy, 930 Orange Center Rd., Orange, Conn. 06477; Berger La Barre, 42 Maple Ave., Bethel, Conn. 06801, and Gus Sandin, 45 Westville Ave., Danbury, Conn. 06810

Filed Sep. 8, 1980, Ser. No. 185,170
Int. Cl.³ F16H 25/12, 29/20
U.S. Cl. 74—57 14 Claims



1. As a new article of manufacture, a reversing attachment adapted to be applied to a diamond thread screw of the type having intersecting thread grooves, comprising in combination:

(a) an abutment adapted to be positioned in a groove at any one of various intersections thereof for engagement with a driving element of an anti-friction follower that rides in the grooves of the screw, said abutment preventing passage of said element past said one intersection, and

(b) means for detachably securing the abutment to the screw at said one intersection to maintain it in its operative position,

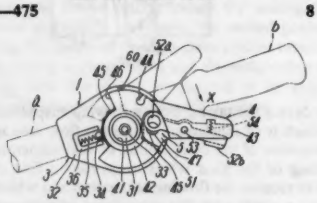
(c) said securing means comprising a snap ring adapted to occupy two intersecting thread grooves, one end of said ring constituting the said abutment.

4,343,201

SPEED CONTROL DEVICE

Keizo Shimano, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

Filed Jul. 2, 1980, Ser. No. 165,935
Claims priority, application Japan, Jul. 16, 1979, 54-98938[U]
Int. Cl.³ G05G 5/06
U.S. Cl. 74—475 8 Claims



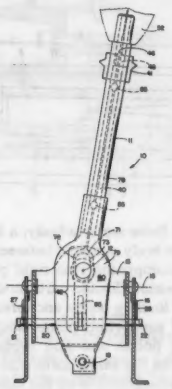
1. A speed control device for operating a control wire to actuate a derailleur comprising: a fixing member having a lever shaft and a control lever supported rotatably to said lever shaft and rotatable in predetermined directions to operate said control wire, said control lever having retaining means for retaining a terminal of said control wire, a retaining mechanism located between said control lever and fixing member which retains said lever at at least on speed control position, said retaining mechanism having a releasing means for releasing said lever from being retained, and having an arm supported to said control lever so as to be rotatable in the same directions as said lever, said arm being rotatable to release said lever from being retained.

4,343,202

PULL-TYPE LOCKOUT ACTUATOR FOR TRANSMISSION SHIFTERS

Charles Osborn, Spring Lake, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Continuation-in-part of Ser. No. 905,123, Aug. 12, 1978, Pat. No. 4,245,521, and Ser. No. 115,126, Jan. 24, 1980. This application Apr. 14, 1980, Ser. No. 139,822
Int. Cl.³ F16H 57/06; G05G 9/16
U.S. Cl. 74—476 17 Claims



1. A pull-type actuator for a transmission shifter lockout comprising:

a stationary base adapted to be mounted to an automotive vehicle;

a gate disposed in said base;

a pivotable upstanding shift lever extending from said base;

detent means mounted for reciprocal movement adjacent the lower end of said shift lever said detent means being alignable in said gate to allow entry into a locked out gear;

a manually actuable pull disposed on the upper end of said shift lever;

a flexible actuator link extending from said detent means to said pull;

detent engaging means for engaging said detent disposed adjacent the lower end of said actuator link;

a plurality of teeth disposed on the upper end of said actuator link; and

tooth engaging means disposed on said pull for engaging said teeth on said actuator link in a one way ratchet-like fashion and thereby tensioning the same between said detent engaging means and said pull.

4,343,203

ROTOR STRUCTURE FOR GYROSCOPIC APPARATUS

Peter E. Jacobson, and Conrad M. Rustenburg, both of Phoenix, Ariz., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 1, 1977, Ser. No. 812,296
Int. Cl.² G01C 19/06
U.S. Cl. 74—5 R 6 Claims

1. A gyroscope bimetal rotor assembly adapted to spin about an axis comprising

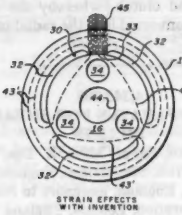
a generally cylindrical rim member fabricated from a high density material and having a first coefficient of thermal expansion characteristic,

a generally flat circular web member fabricated from a relatively lower density material and having a second, relatively higher coefficient of thermal expansion than said rim member,

anti friction spin bearing means having a desired predetermined bearing preload in said web member adapted to support said assembly for spinning about said axis,

interface means between said rim member and said web member for maintaining the mechanical integrity of said rim and web members over an operating temperature range, said interface means comprising

a plurality of annularly distributed interface pads on one of said members formed by relieving a diameter thereof between said pads, said pads concentrating stress forces produced by thermal expansion of said members at said pads, and



a corresponding plurality of annularly distributed holes in said web member in radial alignment with said pads, whereby said holes direct said stress forces toward the adjacent pads and away from said bearing means thereby substantially preventing deformation of said bearing means and deleterious changes in said bearing preload over said operating temperature range.

4,343,204

OPERATING PEDAL FOR POWER TRANSMISSION IN MOTORCYCLE

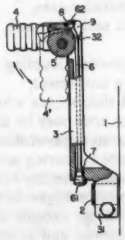
Norio Hoshi, Fujimi, and Tomoyuki Tagami, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1980, Ser. No. 141,392

Claims priority, application Japan, Apr. 26, 1979, 54-56119[U]

Int. Cl.³ G05G *1/14*

U.S. Cl. 74—594.7 **2 Claims**



1. A pedal assembly for operating a power transmission device in a motorcycle, which comprises:

(a) a shaft connected at a base end of said shaft with, and for actuating, said power transmission device, said shaft projecting laterally from a side surface of a casing accommodating therein said power transmission device;

(b) a pedal arm with one end thereof being fixedly secured to said shaft, said pedal arm having an internal groove throughout the length thereof;

(c) a foot pedal, mounted at the other end of said pedal arm on a pivot shaft carried by said pedal arm perpendicularly to the lengthwise direction of said pedal arm in a manner to permit the foot pedal to be collapsible only in the direction toward the said base end of said shaft; and

(d) an elastic member provided in said internal groove in said pedal arm to maintain said collapsible pedal at its pedalling position by the resititutive action thereof.

4,343,205

DIFFERENTIAL

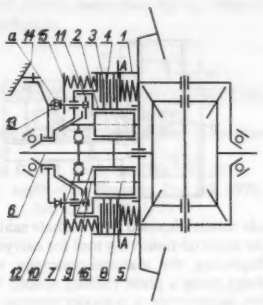
Jan Dzida, Bielsko-Biala, Poland, assignor to Politechnika Lodzka, Lodz and Fabryka Samochodow Rolniczych "POLMO", Poznan, both of, Poland

Filed Mar. 20, 1980, Ser. No. 132,022

Claims priority, application Poland, Mar. 22, 1979, 214348

Int. Cl.³ F16H *1/44, 1/40*

U.S. Cl. 74—711 **1 Claim**



1. In a differential with inner friction forces being variable as a function of the ratio of rotational speeds of the driven axle shafts, adapted especially for axles of vehicles, comprising multiple-disc friction clutch, having an outer hub, constituting a part of the differential housing, connected with an inner hub over inner friction discs and outer friction discs outside of which axially arranged helical compression springs are mounted, and a roller-type clutch means on the inside of the inner hub including a polygonal sleeve mounted non-rotatively on one axle shaft in such way that between its walls and the inner cylindrical surface of the inner hub a plurality of rollers are disposed with a small radial clearance, said rollers being sustained by a cage the improvements comprising a spring-loaded centering device for the roller clutch means mounted in a flexible way in a position symmetrical in relation to the walls of the polygonal sleeve, said cage having a generally conically shaped friction portion with a radial flange, said portion being engageable in a conical recess in the differential housing, and the radial flange of the cage being adapted to contact an annular pressure plate, said pressure plate being axially urged toward and away from said flange by means of a plurality of axially arranged tappets disposed uniformly around the axle shaft, said tappets having cam follower means on the other ends thereof which contact a crown-shaped annular cam mounted non-rotatively in relation to the axle housing, the front face of said cam being provided with recesses disposed uniformly around the periphery thereof in a number equal to the number of the tappets, the tappets being connected to a thrust disc, said disc and the housing being axially connected by tension springs.

4,343,206

SLIDE SYSTEM FOR MACHINE TOOLS

Spivey S. Douglass, Oak Ridge, and Walter L. Green, Knoxville, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 12, 1980, Ser. No. 158,832

Int. Cl.³ B23B *7/14*

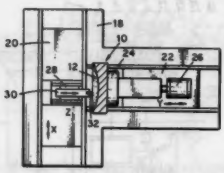
U.S. Cl. 82—2 R **2 Claims**

1. A machine tool for shaping a workpiece with a nonax-

isymmetric surface by turning the workpiece about a central axis of rotation comprising:

a spindle supporting the workpiece for rotation thereof about said axis,

first and second slide means movable along planes normal to one another with the first of said slide means supporting a material-removing tool in a working relationship with the surface of said workpiece and providing for the displacement of the material-removing tool in opposite directions along a plane perpendicular to the axis of rotation of the workpiece, and the second slide means supports said spindle for displacing the latter in opposite directions along a plane parallel to the axis of rotation of the workpiece,



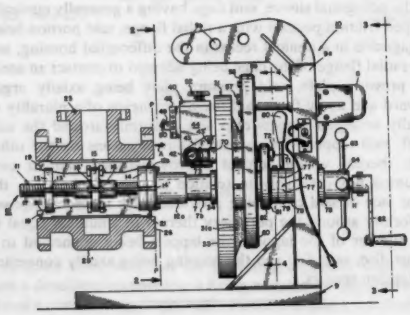
third slide means disposed intermediate said first slide means and the material-removing tool for carrying the latter and for displacing the material-removing tool in opposite directions along a plane radially spaced from said axis of rotation to generate a nonaxisymmetric surface on said workpiece, and means coupled to said third slide means and responsive to a predetermined angular position of said workpiece and the position of said first slide means for displacing the material-removing tool carried by said third slide means a selected distance in either direction along the plane of displacement of said third slide means for providing said workpiece with said nonaxisymmetric surface.

4,343,207

TOOL FOR SPIRAL MACHINING

Joseph R. Paysinger, Houston, Tex., assignor to Crutcher Corporation, Houston, Tex.

Filed Feb. 4, 1980, Ser. No. 118,336
Int. Cl.³ B23B *3/26*
U.S. Cl. 82—4 R **7 Claims**



1. A tool comprising:

a rigid stand having an upright,

a horizontal main support shaft fixedly mounted on the upright,

a platform rotatably mounted about said main shaft, said platform having a face plate,

a first pulley coupled to said platform,

a traveling tool holder movably mounted on said face plate,

a transmission drive mechanism for moving said tool holder in a radial direction relative to the center of the face plate, said transmission being driven by a first shaft through a first clutch, the axis of said first shaft being substantially parallel to the face plate,

a second shaft being rotatably mounted relative to said platform and extending therethrough in a horizontal direction, said first and second shafts being geared to each other,

a motor mounted on the upright with its shaft extending in a horizontal direction for rotating said platform, and

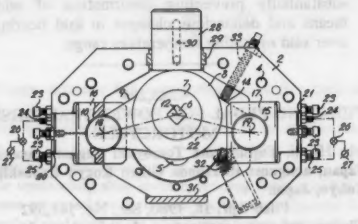
a planetary drive mechanism for rotating said second shaft through a second clutch, whereby the rotation of said second shaft is converted into the radial movement of said tool holder.

4,343,208

METHOD AND APPARATUS FOR SHEARING METAL BILLETS

Basily B. Basily, Cairo, Egypt; Mihir K. Das, Selly Park, England; Clifford G. Price, Stourbridge, England, and Stephen A. Tobias, Selly Park, England, assignors to National Research Development Corporation, London, England

Filed Sep. 8, 1980, Ser. No. 184,971
Claims priority, application United Kingdom, Sep. 12, 1979, 7931594
Int. Cl.³ B23D *15/00*
U.S. Cl. 83—13 **8 Claims**



1. Apparatus for shearing a workpiece comprising:

two lever arms;

each said lever arm having a pivotal mounting, whereby said arms may pivot about parallel axes;

a jaw unit carried by each said lever arm, whereby to hold said workpiece;

slide means whereby the pivotal mounting of each said lever arm may execute sliding movement;

stops associated with said slide means whereby said sliding movements of said lever arms may be arrested, and

means to cause said lever arms to pivot about said mountings and by so doing to execute a shearing action upon a workpiece held in said jaw units, whereby said shearing action may comprise two successive stages, in the first of which stages said pivotal mountings execute sliding movement within their said slide means, and in the second of said stages such sliding is arrested by contact with said stops.

4,343,209

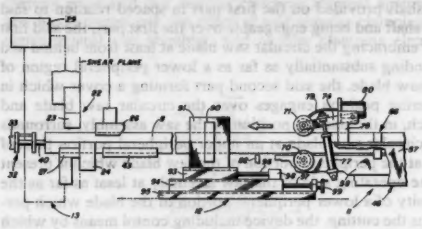
ZONE HEATING AND SHEARING SYSTEM, AND METHOD

Heinrich Moelbert, Bratenahl, Ohio, assignor to Advanced Machine Design Company, Cleveland, Ohio

Filed Aug. 12, 1980, Ser. No. 177,381
Int. Cl.³ B26D *7/10*
U.S. Cl. 83—16 **35 Claims**

27. A method of shearing pieces of predetermined length from bar stock, comprising the steps of incrementally longitudinally advancing a bar one piece length at specified intervals past a zone heating element toward a bar shear to heat the bar at incrementally spaced localized shear areas thereof, locating such zone heating element at a number of piece lengths in front

of such bar shear corresponding to the soak time required to obtain the desired core temperature at each localized shear area by the time each localized shear area is incrementally

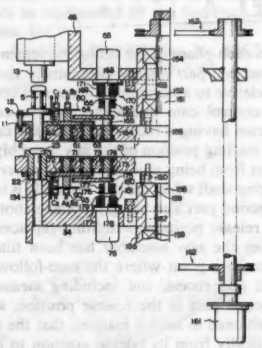


longitudinally advanced from the heating zone through a region free from heating to the bar shear, and sequencially shearing the bar after each incremental advance of the bar at the then presented localized shear area.

4,343,210
PUNCH PRESS

Kazuo Kuroyone, c/o Anritsu Denki Kabushiki Kaisha, 12-20, Minamiazabu 4-chome, Minato-ku, Tokyo, Japan

Filed May 14, 1980, Ser. No. 149,658
Claims priority, application Japan, May 31, 1979, 54-66882; Jul. 31, 1979, 54-96675
Int. Cl.³ B26D *5/08*
U.S. Cl. 83—71 **26 Claims**

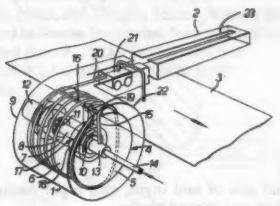


1. A punch press, comprising:
a base member;
a pair of vertically spaced apart upper and lower plates secured to said base member;
a punch holder rotatably mounted on said upper plate for supporting a punch and having a first check point at a fixed position thereof so that said first check point draws a predetermined first locus by rotation of said punch holder;
a die holder rotatably mounted on said lower plate for supporting a die and having a second check point at a fixed position thereof so that said second check point draws a predetermined second locus by rotation of said die holder;
drive means for rotating said punch holder and said die holder;
first detection means adapted to produce a first detection signal when said first check point is positioned at a predetermined first location on said first locus;
second detection means adapted to produce a second detection signal when said second check point is positioned at a predetermined second location on said second locus;
said punch and die being cooperable with each other to machine a workpiece interposed therebetween when said first and second check points are positioned respectively at said first and second locations or when an angular displacement of said first check point from said first location is the same as that of said second check point from said second location;
means for positioning the workpiece in the X axis and/or Y axis;
means supplied with said first and second detection signals and adapted to produce a start signal upon receipt of both of said first and second detection signals;
a control unit adapted to start operation upon receipt of said start signal and to generate a punch instruction signal; and
means for actuating said punch relative to said die upon receipt of said punch instruction signal, whereby to machine the workpiece.

4,343,211
JET CUTTER HAVING SUPPLY HOSE WOUND ON A DRUM

Frode I. Volle, Nesoya, Norway, assignor to Thune-Eureka A/S, Tranby, Norway

Filed Dec. 2, 1980, Ser. No. 212,257
Claims priority, application Norway, Dec. 13, 1979, 794076
Int. Cl.³ B26F *1/26*
U.S. Cl. 83—177 **6 Claims**



1. A cut squirt wherein a nozzle for a jet of cutting liquid is movably supported on a boom extending transversely of the direction of advancement for a web of paper and is connected to a supply hose for cutting liquid which is coiled in one layer on a driven drum and is connected at the drum to a feed conduit for said liquid, whereby the nozzle is driven back and forth along the boom when the hose is uncoiled from or coiled onto the drum, characterized in that the drum end of the hose is attached to a carrier which rotates together with the drum and has cam engagement with a fixed guide member such that the carrier is displaced one hose width in the axial direction of the drum for each revolution of the drum, and in that flexible, liquid-conduit connection is arranged between the drum end of the hose and the cutting liquid feed conduit to the drum.

4,343,212
SHEARING DEVICE FOR INGOTS

Takehiro Hishinuma, and Yutaka Tsuchida, both of Yokosuka, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 845,779, Oct. 26, 1977, abandoned, which is a division of Ser. No. 780,541, Mar. 24, 1977, Pat. No. 4,145,942. This application Jun. 15, 1979, Ser. No. 48,884
Claims priority, application Japan, Mar. 29, 1976, 51-34982; May 28, 1976, 51-62103
Int. Cl.³ B23D *17/00, 25/00*
U.S. Cl. 83—303 **1 Claim**

1. A shearing device for shearing a horizontally arranged elongated longitudinally traveling ingot into a plurality of successive sections, comprising
(a) shear means for shearing the ingot into sections; and
(b) means including bracket means (46) for supporting said

shear means in vertically spaced relation relative to said ingot;

(c) said shear means including

(1) shear main body means (30) connected with said bracket means and including

(i) an opposed pair of side plates (31);

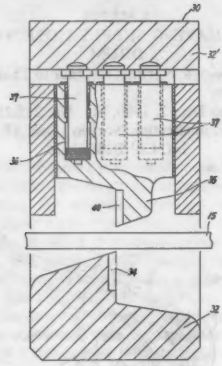
(ii) an upper intermediate member (33) arranged between and secured to said side plates; and

(iii) a lower intermediate member (32) arranged between and secured to said side plates;

(2) a cylinder main body member (35) secured to said side plates;

(3) a first shearing blade (40) arranged adjacent and transverse to the longitudinal axis of said ingot;

(4) a second shearing blade (34) connected with said lower intermediate member and arranged opposite said first shearing blade adjacent and transverse to the longitudi-



nal axis of said ingot, said ingot passing between said first and second blades;

(5) piston (37) and cylinder (36) motor means connected with said cylinder main body member for displacing said first shearing blade vertically relative to said ingot, said motor means including a plurality of cylinders arranged within said main body member and aligned in the direction of movement of the ingot for reciprocating said first blade, the axis of each cylinder being perpendicular to the direction of movement of the ingot and being contained in a vertical plane containing the longitudinal axis of said ingot, whereby when said motor means is actuated to displace said first shearing blade, said ingot is cleanly sheared by said first and second blades, and further whereby when a plurality of shear means are provided for shearing a plurality of ingots, the spacing between the ingots is reduced.

4,343,213

BLADE PROTECTION IN TILTABLE CIRCULAR SAW MACHINES

Karl Drixler, Nürtingen-Neckarhausen, Fed. Rep. of Germany, assignor to Chr. Elsele Machinenfabrik GmbH. & Co. KG, Fed. Rep. of Germany

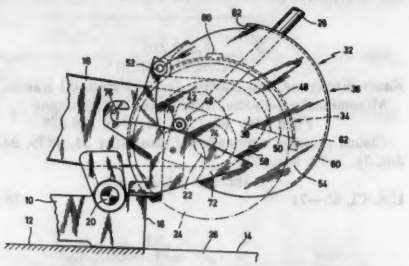
Filed Dec. 10, 1979, Ser. No. 102,124

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856038

Int. Cl.³ B27B *5/18;* B23D *45/04*

U.S. Cl. 83—397 **2 Claims**

1. A protection device or a circular saw blade in a circular saw machine having a tiltable saw assembly which comprises a horizontal saw shaft and which is tiltable about a horizontal pivot axis for the purpose of performing the saw advance, the protection device comprising a first part and a second part which, in a starting position of the saw assembly, together cover the circular saw blade from above at its freely accessible side face and at least at a peripheral portion of the saw blade which is present at the operating side of the saw assembly, the first part being arranged stationarily on the saw assembly and the second part being pivotally mounted on a horizontal bearing shaft provided on the first part in spaced relation to said saw shaft and being engageable over the first part, the said first part embracing the circular saw blade at least from behind and extending substantially as far as a lower peripheral region of the saw blade. the said second part forming a cover which in covering position engages over the circular saw blade and which, in the starting position of the saw assembly, surrounds the circular saw blade at an upper peripheral portion thereof and at the peripheral portion of the saw blade which is present at the operating side of the saw assembly at least as far as the vicinity of a lower peripheral portion of the blade which performs the cutting, the device including contol means by which the second part is adjustable about said bearing shaft relative to the first part, during tilting of the saw assembly, in such a



manner that, in each phase of the tilting movement of the saw assembly, the second part retains substantially the same position in space relative to a horizontal plane, said control means comprising a control cam interacting with a cam-follower member, said cam having a recess engaging the cam-follower member in the starting position of the saw assembly to prevent said second part from being pivoted from its covering position about said bearing shaft when the saw assembly is in its starting position, the second part also being pivotable about said bearing shaft to a release position permitting replacement of the saw blade when the saw assembly has been tilted from its starting position to a point where the cam-follower member has disengaged said recess, and including means releasably locking the second part in the release position, said bearing shaft being positioned in such a manner, that the second part moves automatically from its release position to its covering position under its own weight as soon as said locking means are released.

4,343,214

ARRANGEMENT FOR FASTENING A CIRCULAR SAW BLADE ON A TRUNNION AXIALLY PROJECTING FROM A DRIVE SHAFT

Fritz Schädlich, Leinfelden-Echterdingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 19, 1980, Ser. No. 188,597

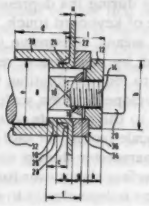
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1979, 2941358

Int. Cl.³ B23D *61/02;* B27B *5/32*

U.S. Cl. 83—543 **13 Claims**

1. An arrangement, comprising a drive shaft rotatable in a given direction and having a trunnion of reduced diameter projecting from one end thereof to form at the junction of drive shaft and trunnion an annular shoulder; a pair of annular clamping elements on said trunnion; circular saw blade means mounted freely rotatably on said trunnion between said annular clamping elements; a pressure ring engaging with an end

face thereof an end face of one of said annular clamping elements directed away from said saw blade means; a screw screwed into a threaded bore in said trunnion and having a head engaging the opposite end face of said pressure ring to thereby press said one annular clamping element against the saw blade means and the other of said annular clamping elements against said shoulder, said annular clamping elements



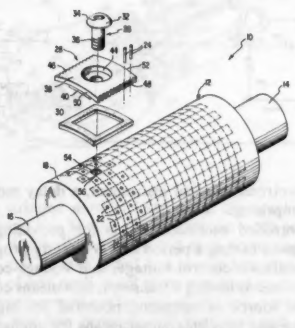
together with said pressure ring and said screw forming slip clutch means connecting said saw blade means to the trunnion of said drive shaft for rotation, said slip clutch means and said saw blade means being constructed to cooperate with each other to permit mounting of said saw blade means on said trunnion only in a correct way in accordance with the direction of rotation of said drive shaft.

4,343,215

PERFORATING CYLINDER

Henry O. Fuchs, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Treasury, Washington, D.C.

Filed Sep. 11, 1980, Ser. No. 186,363
Int. Cl.³ B26F *1/08*
U.S. Cl. 83—670 **6 Claims**



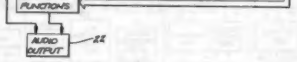
1. In a male perforating cylinder for cooperating with a corresponding female perforating cylinder to perforate stamp material comprising a cylinderical surface, a plurality of spaced-apart aligned perforating pins, a means for clamping said plurality of pins to said surface which permits rapid and easy replacement of said pins, said plurality of pins comprising a first plurality of pins oriented to lie in planes passing through the axis of rotation of said cylinder and a second plurality of pins oriented to lie in planes transverse to said axis, said first plurality of pins consisting of the number of pins necessary to perforate a set of opposing edges of a stamp, said second plurality of pins consisting of the number of pins necessary to perforate the set of remaining opposing edges of the stamp, said means for clamping said plurality of pins comprises at least one clamp, said clamp comprising a cavity, an individually removable clamping member, a resilient member, and an attaching means, wherein said cavity comprises a base and four walls, said four walls further comprises a first opposing pair of walls and a second opposing pair of walls, said first opposing pair of said walls are oriented to lie in said planes passing through the axis of rotation of said cylinder and said second opposing pair of said walls are oriented to lie in said planes transverse to said axis, said first opposing pair of walls contains a first plurality of grooves of substantially semicircular cross section, said second opposing pair of walls contains a second plurality of grooves of substantially greater than semicircular cross section, said clamping member includes a first pair of sides with a first plurality of substantially semicircular cross section grooves therein for cooperating with said first plurality of grooves in said first opposing pair of said walls to receive and retain said first plurality of pins, said clamping member further includes a second pair of sides having straight and ungrooved sides for cooperating with said second plurality of grooves in said second opposing pair of walls to receive and retain said second plurality of pins whereby said walls, said resilient means and said clamping member coact to keep said plurality of pins in alignment to permit proper meshing action with said female perforating cylinder.

4,343,216

SERIAL INTERFACE CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Richard S. Swain, Niles, and Douglas Moore, Vernon Hills, both of Ill., assignors to Norlin Industries, Inc., White Plains, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,561
Int. Cl.³ G10B *3/10*; G10F *5/00*
U.S. Cl. 84—1.01 **7 Claims**



1. In an electronic musical instrument of the type having a programmed microprocessor for controlling selected functions of said instrument and a plurality of key and tab switches responsive to a scan control signal repetitively scanning said switches for developing a serial data signal defining the operated key and tab switches during each of said scans, an interface circuit interposed between said microprocessor and said switches comprising:

means for developing a clock signal;

means responsive to said clock signal for developing said scan control signal;

means coupled to said switches for receiving said serial data signal developed in response to said scan control signal;

memory means comprising a plurality of addressable multibit memory locations;

means responsive to said received serial data signal for causing binary representations of operated ones of said key and tab switches to be stored at said memory locations; and

means enabling said stored representations to be coupled to said microprocessor from said memory means in response to two consecutive scans of said key and tab switches resulting in the development of identical serial data signals immediately preceded by a scan resulting in the development of a serial data signal different therefrom.

4,343,217
DUAL MODE GUITAR

Reid Brody, 5525 W. Warren St., Morton Grove, Ill. 60053

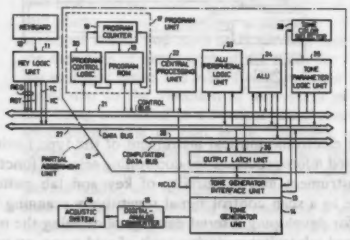
Filed Mar. 12, 1981, Ser. No. 242,881
Int. Cl.[3] G10D *1/08*; G10G *3/00*; G10H *3/18*
U.S. Cl. 84—1.16 5 Claims

1. A stringed musical instrument of the guitar type comprising a body portion, a first neck secured to and radiating outwardly from said body portion, a second neck secured to and radiating from said body portion in a direction substantially opposite but non-colinear to said first neck, each of said necks adapted to carry strings under tension, a mechanical rotary connection attached to the rear of said body proximate to the center of gravity of said body and adapted to be attached to a harness adapted to be worn by a performer.

4,343,218
ELECTRONIC MUSICAL INSTRUMENT

Tsuyoshi Futamase, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Continuation of Ser. No. 27,244, Apr. 5, 1979, abandoned. This application Nov. 19, 1980, Ser. No. 208,268
Claims priority, application Japan, Apr. 11, 1978, 53/42431
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.21 28 Claims



1. A polyponic electronic musical instrument of a type wherein notes to be played are selected by depression of keys, and wherein a tone is produced by separately calculating the amplitude contribution of each partial of the tone and accumulating the partials, comprising:

tone generator means for calculating partials individually at a specific number of time slots, each time slot being available for assignment to any partial of any selected note;

partial tone assignment means for assigning, responsive to depression of a key designating a selected note, each partial to be produced individually for that note to any available one of the time slots;

said tone generator means calculating the partials having been assigned to available time slots, and accumulating said calculated partials to produce said tone, assigned partials for different, concurrently selected notes being assigned to separate arbitrary time slots.

26. A polyphonic keyboard electronic musical instrument in which a time shared tone generator synthesizes a tone by separate evaluation of each partial associated with each note selected by key depression, the improvement comprising:

tone parameter storage means for storing, for every tone partial, separate amplitude and/or envelope duration touch sensitivity scale factors for scaling the amplitude and/or envelope duration of the respective partial,

touch responsive means for determining the elapsed transit time of each key during the depression thereof, said time being indicative of keyboard touch,

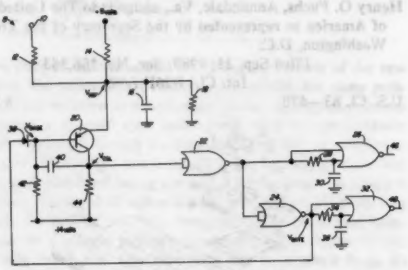
touch calculation means, responsive to the elapsed transit time determined by said touch responsive means and operative prior to tone production, for computing amplitude and/or envelope duration scale values for each partial in response to the contents of said touch responsive means and the scale factors for said each partial accessed from said tone parameter storage means, and

tone generator interface unit means for providing said computed scale values independently to said tone generator in the respective time-shared time slots associated with corresponding individual partials for use in said evaluation.

4,343,219
DELAY LINE OSCILLATOR

Dale M. Uetrecht, Colerain Township, Hamilton County, Ohio, assignor to Baldwin Piano & Organ Company, Cincinnati, Ohio

Filed Jun. 24, 1980, Ser. No. 162,631
Int. Cl.[3] G10H *1/043*
U.S. Cl. 84—1.24 5 Claims



1. In an electronic musical instrument, a delay modulation apparatus comprising:

voltage-controlled oscillator means for providing output clock signals having a period that is directly proportional to a modulation control voltage, said voltage-controlled oscillator means having a transistor, bias means connected to a first source of operating potential for biasing the emitter of said transistor, input means for connecting the emitter of said transistor to a source of modulation control voltage, capacitive means connected between the base of said transistor and the collector of said transistor, first impedance means connecting the base of said transistor to a second source of operating potential, second impedance means connecting the collector of said transistor to the second source of operating potential, first inverter means having its input connected to the collector of said transistor for providing a first output clock signal, second inverter means having its input connected to the output of said first inverter means for providing a second output clock signal, and connecting means connecting the output of said second inverter means to the base of said transistor;

whereby when the second clock output of said second inverter means is in a first state, said transistor is in the off state thereby causing said capacitive means to discharge through said second impedance means and the voltage level at the collector of said transistor to decrease until the

threshold voltage of said first inverter means is reached, at which time the first clock output of said first inverter means switches from a second state to the first state thereby causing the second clock output of said second inverter means to switch from the first state to the second state, thereby in turn causing said transistor to switch to the on state, thereby further causing said capacitive means to charge through said first impedance means until the threshold voltage of said first inverter means is reached, at which time the output of said first inverter means again switches states and the cycle is repeated; and

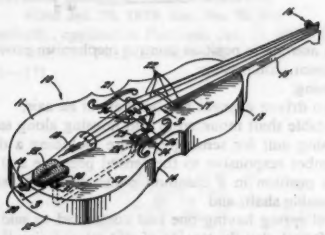
analog delay line means having an output terminal, an input terminal for receiving an input signal and a clock terminal for receiving the first and second clock signals from said voltage-controlled oscillator means, said analog delay means producing delay in a signal applied at the input of said analog delay line means that is directly proportional to the period of the first and second clock signals, and for providing a delayed signal at the output terminal of said analog delay line means, whereby the amount of delay introduced to a signal between the input terminal and the output terminal of said analog delay line means is directly proportional to the modulation control voltage applied to the input means of said voltage-controlled oscillator means.

4,343,220

VIBRATO ATTACHMENT FOR STRINGED INSTRUMENTS

Eric G. Lundquist, 2340 - 22nd St., Rockford, Ill. 61108

Filed Apr. 13, 1981, Ser. No. 253,789
Int. Cl.³ G10D *3/00*
U.S. Cl. 84—313 **6 Claims**



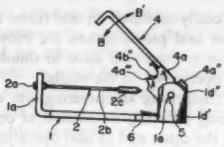
1. In a stringed musical instrument, the combination of, a hollow sound box having top and bottom walls joined by end walls and side walls, an elongated neck projecting outwardly from one end of said sound box, a peg box mounted on the outer end of said neck, a tail piece mounted on the top of said sound box adjacent the other end of said box, a bridge disposed on top of said box between said neck and said tail piece, a plurality of spaced strings extending from said tail piece over said bridge to said peg box and tensioned by the peg box to bear downwardly on the bridge, a member disposed between the top of said box and said bridge and movable relative to the box to raise and lower the bridge thereby to increase and decrease the tension of said strings and cause a vibrato as the instrument is played, a first hole formed in the top of said box adjacent said member, a second hole formed in said box and at a point spaced from said first hole to be adjacent a part of the body of a player of the instrument, an actuator disposed outside said box and adjacent said second hole to be engaged and moved by the body of the player, an elongated movable rod disposed within said box and extending from said first hole to said second hole, a first connector projecting through said first hole and rigidly joining said rod and said member, said connector being operable to move said member as said rod is moved thereby to move said bridge up and down, and a second connector projecting through said second hole to join said actuator and said rod and operable to move said rod upon movement of said actuator.

4,343,221

ACOUSTIC SOUND GENERATING DEVICE

Fumito Komatsu, Shiojiri, and Makoto Orii, Nagano, both of Japan, assignors to Kabushiki Kaisha Sankyo Seki Seisakusho, Nagano, Japan

Filed May 13, 1980, Ser. No. 149,593
Claims priority, application Japan, May 24, 1979, 54-69894[U]
Int. Cl.³ G10D *13/08*
U.S. Cl. 84—404 **14 Claims**



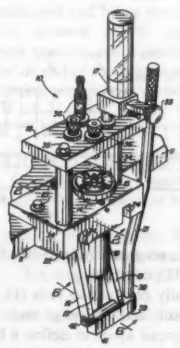
1. An acoustic sound generating device comprising a base frame, at least one vibrating rod member formed of a base end portion secured to said base frame, an intermediate portion having a small diameter and a free end portion to be picked, and pawl segment means, movably supported by said base member and having at least one associated picking projection, for picking said free end portion of said vibrating rod while moving along a predetermined path from a first position to a second position to thereby produce acoustic sounds and for picking said free end again while returning along said predetermined path from said second position to said first position.

4,343,222

SHELL RELOADING MACHINE

Michael J. Dillon, 7021 E. Paradise Dr., Scottsdale, Ariz. 85254

Filed Oct. 16, 1980, Ser. No. 197,540
Int. Cl.³ F42B *33/02*
U.S. Cl. 86—27 **7 Claims**



1. A shell reloading machine comprising in combination:

a frame,

a revolubly mounted shell registering plate adapted to carry a plurality of shells,

a support mounted on and arranged to extend above said frame and said plate,

a plurality of tools mounted on said support, one at each of a plurality of work stations for preparing and reloading

shells depending from said plate and arranged in a circle so as to register with a plurality of shells held by said plate,

said tools sequentially comprising at each of said work stations a sizing die for reshaping the shells' outer wall and dislodging the spent primer from a primer cavity in the shell, primer insertion tool for inserting a new primer in the primer cavity of the shell, a powder dispenser and a bullet positioner and securing element,

a drive cylinder comprising piston means mounted below said plate,

said piston means being connected to said plate for moving shells mounted thereon into engagement with said tools,

said plate being revolubly mounted on said piston means, and

a lever arm pivotally mounted on said frame and connected at one end to said piston means for moving said plate toward and away from said tools to simultaneously execute various operations on the shells,

said lever arm comprising an operating arm and a linkage,

said linkage being pivotally connected at one end to said frame and at the other end to said operating arm,

whereby pivotal movement of said operating arm causes relative movement of said piston means.

4,343,223

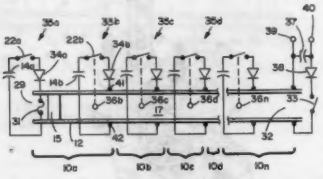
MULTIPLE STAGE RAILGUN

Ronald S. Hawke, Livermore; Jonathan K. Scudder, Pleasanton, and Kristian Aaland, Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 23, 1980, Ser. No. 153,365

Int. Cl.³ F41F *1/00, 1/02, 7/00*

U.S. Cl. 89—8 **9 Claims**



1. A multiple stage magnetic railgun (**10**) having breech and discharge ends (**29,32**), comprising:

a pair of electrically conductive rails (**11,12**) extending between said breech and discharge ends (**29,32**), said rails (**11,12**) being spaced apart to define a bore (**17**) therebetween, said pair of rails (**11,12**) being divided into a plurality of successive rail stages (**10***a–n*) along the length of said railgun (**10**),

energizing means (**35***a–n*) for electrically energizing each successive rail stages (**10***a–n*) in sequence to accelerate an arc (**13**) through the energized stage and in a direction toward the discharge end (**32**) of said railgun (**10**), and

means (**34***a–n*, **55***a–n*) for preventing propagation of energy from an energized stage (**10***b–n*) back towards the breech end (**29**) of said railgun (**10**).

4,343,224

AUTOMATIC CONTROL SYSTEM

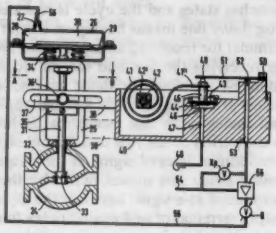
Lothar Kemmler, Mörfelden, Fed. Rep. of Germany, assignor to Samson Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

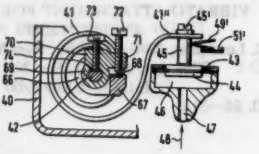
Filed Oct. 17, 1979, Ser. No. 85,591

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847380; Feb. 14, 1979, 2905577; Feb. 15, 1979, 2905799

Int. Cl.³ F15B *13/16*

U.S. Cl. 91—47 **7 Claims**





1. An automatic position control mechanism powered by a servo-motor, comprising:

a housing;

a servo driven element rotatable about an axis;

a rotatable shaft mounted in said housing along said axis;

a sensing unit for sensing pressure including a diaphragm member responsive to the sensed pressure and having a rest position in a common plane with the axis of said rotatable shaft; and

a spiral spring having one end connected to said rotatable shaft such that the tension of said spiral spring is increased and decreased in accordance with the rotation of said servo driven element, and another end connected by a pin to said diaphragm member to transmit the tension of said spiral spring to said pressure sensing unit, said servo driven element being connected to said rotatable shaft.

4,343,225

FLUID ACTUATOR

Dean Runkle, LaPorte; Robert K. Wilson, Granger, and William E. Monroe, Syracuse, all of Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jun. 2, 1980, Ser. No. 155,355

Int. Cl.³ F01B *7/18;* F01L *23/00*

U.S. Cl. 91—52 **17 Claims**

1. In an actuator;

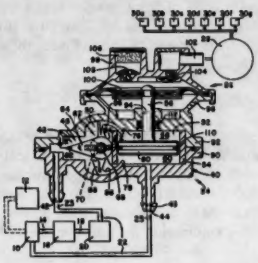
a housing having an inlet and an outlet for communicating a pressurized fluid through said housing;

an output member movable relative to said housing and exposed to the pressurized fluid therein; and

a valve assembly movable within said housing from a first position to a second position, said valve assembly substantially closing communication from the inlet to the outlet in the first position,

said valve assembly communicating fluid pressure to one side of said output member to cause the latter to move in a first direction relative to the housing, said output member being

movable in the first direction to engage said valve assembly to move the latter away from the first position toward the second position, said valve assembly communicating fluid pressure to another side of said output member to cause the latter to move in a second direction relative to the housing, said output member being movable in the second direction



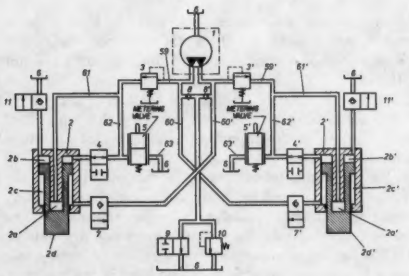
to engage said valve assembly to move the latter away from the second position toward the first position, and said output member defining a differential area between opposite sides thereof such that communication of fluid pressure to both sides of said output member bias the latter to move away from a neutral position.

4,343,226

ARRANGEMENT FOR HYDRAULIC PRESSES AND BENDING PRESSES

A. A. Ribeiro de Almeida, Porto, Portugal, assignor to Firma Inter-Hydraulik GmbH, Berneck, Switzerland

Filed Jul. 10, 1979, Ser. No. 56,254
Claims priority, application Portugal, Jul. 11, 1978, 68274
Int. Cl.³ F01B *25/04;* F15B *11/22*
U.S. Cl. 91—171 **7 Claims**



1. A hydraulically actuated machine comprising two parallel spaced apart multiple-acting cylinders having respective pistons connected with opposite end portions of a beam that has a predetermined orientation substantially transverse to the cylinder axes, and wherein the pistons must be constrained to move at equal rates through their extension strokes to maintain said orientation of the beam, said machine having two effectively separate sources of pressure fluid at substantially equal flow rates, one for each of said cylinders, and each of said cylinders having at a blind end thereof a blind end chamber into which pressure fluid is fed for extension of its piston and at a rod end thereof a rod end chamber into which pressure fluid is fed for retraction of its piston, said machine being characterized by:

A. each cylinder having a coaxial projection therein that extends into a well in its piston and defines an inner chamber within the piston into which pressure fluid can be fed to impose an extending force upon the piston, the blind end chamber in the cylinder being annular and in surrounding relation to said coaxial projection;

B. bifurcated duct means for each cylinder, each said duct means having

(1) a common portion connected with the pressure fluid source for the cylinder and

(2) a pair of branch portions,

(a) one of which is connected with the inner chamber of the cylinder and

(b) the other of which is connected with the blind end chamber of the cylinder;

C. means connecting the rod end chamber of each cylinder in feedback relation to the pressure fluid source for the other cylinder so that during the extension strokes of the pistons fluid expelled from the rod end chamber of each cylinder augments the supply of fluid fed to the blind end chamber of the other cylinder;

D. a two-condition valve for each cylinder, each said two-condition valve being connected in said other branch portion of the bifurcated duct means for the cylinder and being shiftable between

(1) a closed condition blocking flow of fluid from the pressure fluid source for the cylinder to the blind end chamber of the cylinder, so that pressure fluid can flow only to the inner chamber, for rapid extension of the piston, and

(2) an open condition permitting flow of pressure fluid from said source to the blind end chamber as well as the inner chamber, for slower and more forceful extension of the piston;

E. a pair of synchronizing valves, one for each cylinder, each having a metering valve element which is progressively movable between a closed position and a fully open position;

F. means connecting the synchronizing valve for each cylinder between said common portion of the bifurcated duct means for the cylinder and a vent outlet, to provide for venting of pressure fluid flowing towards said branch portions at a rate that increases with increasing displacement of said metering valve element towards said open position; and

G. a pair of sensor means, one for each synchronizing valve, each said sensor means being connected with an end portion of the beam to which the cylinder for its synchronizing valve is connected and being arranged to displace the metering valve element of its synchronizing valve towards its open position substantially proportionally to displacement of its end of the beam away from said orientation in the direction of piston extension.

4,343,227

HYDRAULIC PERCUSSION APPARATUS

Esa Karru; Pekka Salmi, both of Tampere, and Hannu Paasonen, Nokia, all of Finland, assignors to Oy Tampella AB, Finland

Filed Jun. 23, 1980, Ser. No. 162,157
Claims priority, application Finland, Jun. 26, 1979, 792019
Int. Cl.³ F01B *7/18*
U.S. Cl. 91—276 **5 Claims**

1. In a hydraulic percussion apparatus comprising:

a body member,

a cylinder disposed within said body member,

a piston reciprocable within said cylinder,

a distributing valve controlling energization of said percussion apparatus,

a hydraulic pump,

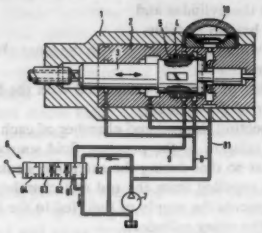
an accumulator,

means providing hydraulic channels between said pump and said accumulator to thereby form a percussion circuit,

means providing hydraulic channels with said distributing valve to thereby form a distributing valve circuit,

means providing a free circulation circuit in parallel with said percussion circuit, the improvement comprising:

a start-and-stop valve having a plurality of positions, including



an intermediate position in which the pressure in said percussion circuit rises up to a predetermined value while said distributing valve circuit remains closed independently of the pressure in said percussion circuit.

4,343,228

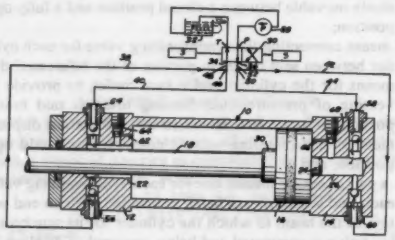
HYDRAULIC CYLINDER ARRANGEMENT

Bernard J. Wallis, 25200 Trowbridge Ave., Dearborn, Mich. 48124

Continuation of Ser. No. 6,274, Jan. 25, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,337

Int. Cl.³ F15B *15/22, 13/042*

U.S. Cl. 91—457 **3 Claims**



1. In combination, a hydraulic cylinder having a bore therein, a piston adapted to be reciprocated axially between the opposite ends of the bore in response to a differential pressure across the piston, said piston being connected to a work output member, a pair of unidirectional, oppositely acting check valves directly adjacent each end of the cylinder, one side of each check valve being directly connected with the adjacent end of the cylinder bore by means forming a short passageway, two pairs of relatively long, individual hydraulic conduits connected at one end, one each to the other side of each check valve, the other ends of the individual conduits in each pair being connected together, a control valve located remotely from said cylinder and having a plurality of ports thereon, one of said ports connected to a pump, another of said ports being connected to sump, a heat exchanger for cooling the oil returned to sump, the connected ends of one pair of said conduits being connected with a third port on the control valve by means forming a short passageway and the connected ends of the other pair of conduits being connected to a fourth port on said control valve by means forming another short passageway, said control valve being operable to supply hydraulic fluid under pressure to either of said third or fourth ports and simultaneously connect the other of said third and fourth ports with sump, said individual conduits each having a length many times greater than the length of all of said short passageways, said check valves providing the sole communication between said conduits and the cylinder bore and being responsive at all times to open and close in response to the pressure differential between the adjacent end of the cylinder bore and the associated conduit so that one of the long conduits in each pair comprises an inlet passageway to the cylinder and the other an outlet passageway from the cylinder, whereby, when the piston is reciprocated between the opposite ends of said bore, all of the fluid discharged through said outlet passagway conduits from the opposite ends of the cylinder is constrained by said oppositely acting check valves to flow to sump before it is directed back into either end of the cylinder through said inlet passageway conduits.

4,343,229

ASSEMBLED PISTON FOR ENGINE

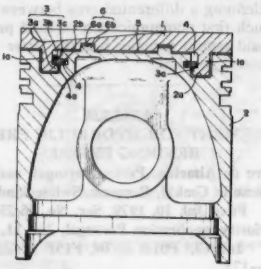
Yoshihiko Tsuzuki, Nagoya; Kiyoshi Uchida, and Toshio Tanahashi, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 3, 1979, Ser. No. 35,682

Claims priority, application Japan, Jun. 15, 1978, 53-725870

Int. Cl.³ F16J *1/00*

U.S. Cl. 92—212 **13 Claims**



1. An assembled engine piston comprising

a hollow metal body having an axially extending annular groove in a top end thereof, said groove opening through a top surface of said body, the metal of the body being selected from the group consisting of aluminum or an aluminum alloy,

a unitary ceramic material head on the top of said body, said head comprising an end wall covering the top end of the body and an axially extending annular projection extending into said groove,

radially extending interengaging means within said annular groove and carried by said projection and said body for securing said head to said body against relative axial movement, said interengaging means comprising, first and second inclined surfaces movable into a position of mating engagement in response to rotation of said head with respect to said body to tightly seat the head on the body and

means to prevent relative rotation of said head and body, after assembly, said means comprising, a closed end cavity formed in said head, said cavity opening toward said body, and a boss deformed into said cavity by cold or hot pressing a portion of the body into the cavity from inside the body.

4,343,230

AUXILIARY DEVICE FOR CLIMATE-CONTROL UNITS IN MOTOR VEHICLES

Gustaf B. Lundström, Göteborg, Sweden, assignor to AB Volvo, Göteborg, Sweden

Filed Jan. 15, 1980, Ser. No. 112,323

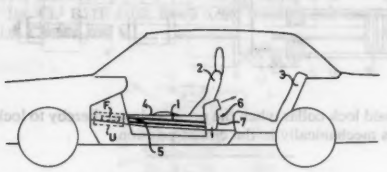
Claims priority, application Sweden, Jan. 25, 1979, 7900680

Int. Cl.³ B60H *1/00*

U.S. Cl. 98—2.05 **3 Claims**

1. In a motor vehicle, in combination, a climate-control unit including fan means to the exhaust side of which ducts are

connected with conduct air both to the space in front of the front seat of the vehicle and to the space between the front seat and the back seat, and an auxiliary device comprising a housing with at least one inlet, which is connected to at least one duct which conducts air from said fan means to the space between the front and back seats, and at least one outlet, said housing containing an electrically driven fan whose suction side faces the inlet of the housing and whose discharge side faces the



outlet of the housing, said housing outlet having at least one outlet vent which is arranged to produce an air flow towards the floor of the vehicle, and at least one outlet vent which is arranged to produce an air flow directed towards the back seat, said housing being provided with manually adjustable damper members for regulating the distribution of air between said vents and with manually adjustable means for starting and stopping the fan and for manual adjustment of the r.p.m. of the fan.

4,343,231

BREWING APPARATUS HAVING SAMPLING MEANS DELIVERING SUSPENSION TO FERMENTING VESSEL

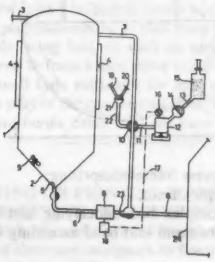
Andre F. Devreux, Mons, Belgium, assignor to Compagnie Internationale de Participation et d'Investissement "Cipari" S.A., Luxembourg, Luxembourg

Filed Jan. 22, 1981, Ser. No. 227,555

Claims priority, application Luxembourg, Feb. 7, 1980, 82145

Int. Cl.³ C12G *3/04, 3/02*

U.S. Cl. 99—277.2 **9 Claims**



1. Plant for adjusting the amount of yeast to be introduced into a fermentation enclosure, comprising a container having a conical bottom containing yeast suspended in a liquid and a pipe connecting the bottom of said container to at least one fermentation tank, as well as a regulating pump, for supplying yeast from the yeast container into said fermentation tank, a pipe for recycling the suspended yeast contained in said container, means for insuring, during a predetermined time interval, the recycling of the suspension of yeast from the bottom of said container to the upper part of this container, means for taking from said recycling pipe, at selected moments, a sample having a predetermined volume of the yeast suspension, during the recycling thereof, and for sending said sample into a little fermenting vessel to which a nutrient agent is supplied, means for determining the fermentative power of the yeast sample in the fermenting vessel and means for adjusting the yeast supply of the fermentation tank in accordance with the fermentative power of the yeast sample as determined in the fermenting vessel.

4,343,232

COFFEE MAKER

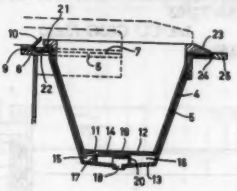
Wierd Corbier, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 29, 1980, Ser. No. 202,036

Claims priority, application Netherlands, Nov. 15, 1979, 7908339

Int. Cl.³ A47J *31/06*

U.S. Cl. 99—299 **3 Claims**



1. A coffee maker including a housing and a filtering assembly removably suspendible in the housing; said filtering assembly comprising a filter vessel provided with an outlet opening in its bottom, a filter-vessel holder surrounding the filter vessel and provided with an outlet opening in its bottom, the filter vessel bottom being spaced from the filter-vessel holder bottom, an upright partition arranged on the bottom of the filter-vessel holder and dividing the space between the filter vessel bottom and the filter-vessel holder bottom into a discharge section and a drip reservoir, an upright pin extending from the filter-vessel holder bottom for engagement with the outlet opening of the filter vessel, and means to rotate the filter vessel and the filter-vessel holder with respect to each other to vary the position of the upright pin for control of the rate of flow of coffee through the discharge section and also alternatively to position the filter vessel outlet opening over the drip reservoir.

4,343,233

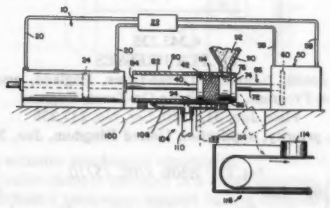
APPARATUS FOR PRODUCING AND COLLECTING A LIQUID EXTRACT AND A DRY BY-PRODUCT FROM A MASH

Kermit H. Burgin, R.R. 1, Box 334, Whitestown, Ind. 46075

Filed Mar. 31, 1980, Ser. No. 135,922

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—116 **12 Claims**



1. An apparatus for producing and collecting a liquid extract and a dry by-product from a mash of material, comprising: an extraction chamber having at least one open end, the chamber including a material inlet opening in proximity to the open end for filling the chamber with the mash and a liquid outlet for collecting the liquid extract, a first plunger movable in the chamber, a second plunger movable relative to the open end, means for moving the first and second plungers to close the open end and to compress the mash within the extraction

chamber thereby to extract the liquid and form a pressed dry by-product therefrom, the second plunger including closure means received in the open end in response to the moving means to close the filler opening during compression of the mash, a by-product outlet opening for collecting the dry by-product, and means for expelling the by-product from the extraction chamber.

4,343,234

PRESSURE-FIXATION APPARATUS

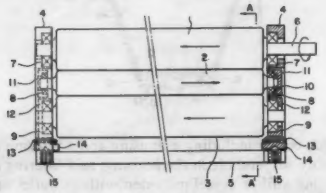
Yoshitaka Sasaki, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Japan

Filed Apr. 2, 1979, Ser. No. 26,210

Claims priority, application Japan, Mar. 31, 1978, 53/37925; Jun. 26, 1978, 53/77303

Int. Cl.³ G03G *15/20*

U.S. Cl. 100—158 R **7 Claims**



1. A device for fixing a dry, pressure-fusible toner image to a carrier sheet by pressure, the device comprising:

A housing member including a pair of vertically oriented side frame members,

first and second rolls having different diameters and forming a pair of pinch rolls, said rolls being journaled at both their ends in the side frame members to form a nip through which the carrier sheet, having a dry, pressure-fusible toner image thereon, is passed to fix the toner image to the sheet,

means for imparting opposing axially directed forces to said pinch rolls to rub the carrier sheet passing therebetween and to prevent offset images and creases from occurring on the carrier sheet, said means including means for driving one of said pair of pinch rolls by surface contact with the other of said pair and means for positioning said pinch rolls with a skew angle ranging from about 10' to 1°30' between the axes of said pinch rolls, said skew angle being measured between the projections of said axes on a horizontal plane, and

a third roll resiliently pressing the second roll to the first roll.

4,343,235

FILTER PRESSES

Paul F. Jones, Newcastle-Under-Lyme, England, assignor to Johnson-Progress, Ltd., Stoke-On-Trent, England

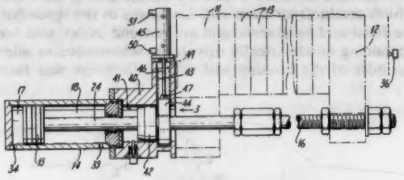
Filed Jan. 31, 1980, Ser. No. 117,335

Claims priority, application United Kingdom, Jan. 31, 1979, 7903411

Int. Cl.³ B30B *7/00, 15/10*

U.S. Cl. 100—204 **4 Claims**

1. A plate type filter press comprising a king end, a queen end horizontally movable toward and away from the king end, a stack of horizontally movable filter plates between said king end and said queen end, a piston-and-cylinder unit operable to open and close the press, said piston-and-cylinder unit including a cylinder connected to one of said king end and said queen end and a horizontally-extending piston rod connected to the other of said king end and said queen end, a lock collar fast on said piston rod to move therewith, a lock gate movable in a direction at right angles to the axis of said piston rod into and out of the path of the lock collar, and a lock piston-and-cylinder coupled to said lock gate to move said lock gate into the



path of said lock collar when the press is closed thereby to lock the press mechanically in the closed position.

4,343,236

PRESTRESSED PRESS FRAME

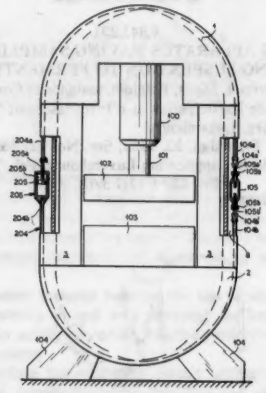
Eduard J. C. Huydts, Düsseldorf-Gerresheim, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Feb. 27, 1981, Ser. No. 239,024

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007975

Int. Cl.³ B30B *15/04*

U.S. Cl. 100—214 **5 Claims**



1. A prestressed press frame comprising:

an upwardly complex head;

a downwardly complex bed underlying and spaced from said head, said bed and said head extending in a common direction;

at least a pair of posts disposed between said bed and said head on opposite sides of the frame, said posts being formed with outwardly open compartments;

a multiplicity of tension members extending around said bed and said head in a double-U pattern and passing through said compartments, each of said tension members lying in common vertical plane perpendicular to said direction, said tension members being spaced apart in said direction, each tension member defining in the respective plane a stress section, the press sections of alternate tension members in succession in said direction being offset to one side and the other side of said frame; and

a respective stressing unit connecting opposite ends of each tension member and applying tension thereto, the stressing units for successive tension members in said direction being received in said compartment on alternate sides of said frame with the stressing units always engaging the ends of outermost tension members in said compartment.

4,343,237

APPARATUS FOR MANUFACTURING CABLE HARNESSES AND PRINTER THEREFOR

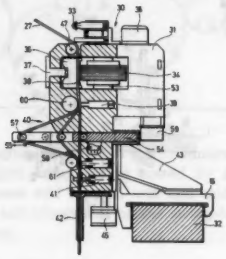
Dieter Endruhn, Appel, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,783

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1979, 2939360

Int. Cl.³ B31F *1/07;* B44B *5/00;* B21F *45/00;* B41F *13/56*

U.S. Cl. 101—11 9 Claims



1. A mounting apparatus for continuously manufacturing a cable harness including a plurality of initially unmarked cables, comprising table means including a table top and pin means extending from the table top, cable coil magazine means arranged at one side of said table means for holding a plurality of cable coils and for cooperation with said table means, program controllable cable laying head means, carriage means for supporting said cable laying head means on said table means, said magazine means comprising means for feeding a cable in a main feed advance direction from any one of said cable coils toward and through said cable laying head means, said cable laying head means comprising as an integral part thereof means for marking a cable and means for buffering a cable, said buffering means being arranged downstream of said cable marking means as viewed in said main feed advance direction and means for moving said buffering means in a direction extending substantially perpendicularly to said main feed advance direction of a cable being laid, to such an extent that a length of cable is buffered to form a loop prior to its marking which loop provides a dwell time sufficient for said marking which thus takes place as part of the continuous cable harness manufacturing with a continuous cable feed advance.

4,343,238

COUNTING OR PRINTING MECHANISM FOR CONSECUTIVE COUNTING NUMBERING

Ulf Koch, Eberbach, and Gerhard Nagel, Hirschhorn, both of Fed. Rep. of Germany, assignors to Esselte Pendaflex Corporation, Garden City, N.Y.

Filed Dec. 15, 1980, Ser. No. 216,497

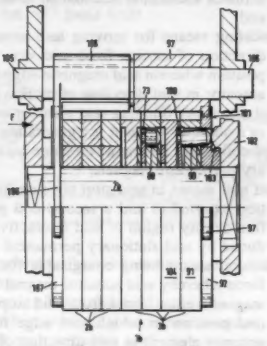
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1980, 3001321

Int. Cl.³ B41J *45/00*

U.S. Cl. 101—85 14 Claims

1. In a printing device comprising a frame, plural individually rotatable printing wheels, and holding means for holding each wheel individually in a particular rotated position, each of said printing wheels mounted by an axial bore along the longitudinal axis of a common rotatable shaft, at least two of said wheels being counting wheels having numerical characters spaced about and on an outer periphery thereof such that each counting wheel provides a different place of a plural place number, mechanical advancing means for consecutive, stepwise rotary indexing of said counting wheels to consecutive counting positions, said advancing elements coupleable together in a predetermined counting rhythm such that two adjacent counting wheels are rotatable together by one of said advancing elements according to said rhythm, the improvement comprising:

each of said counting wheels comprising a driving side surface and a driven side surface such that the driven side surface of each counting wheel abuts and slidably engages



the driving side surface of a higher place wheel, each driving side and driven side being recessed, respectively, to provide a driving side recess and a driven side recess within which said position holding means and said advancing means are concealed from said outer periphery and actuatable during said indexing such that closer spacing of each place of said plural place number is provided.

4,343,239

ELECTROMAGNETIC RELEASE MECHANISM FOR PRINT HAMMERS OR THE LIKE

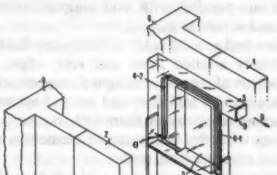
Hans-Gordon Seifert, Weil im Schonbuch, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,898

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1979, 2944287

Int. Cl.³ B41J *9/30*

U.S. Cl. 101—93.34 3 Claims



1. An actuator mechanism comprising

an actuator element movable in a linear direction including an actuator permanent magnet having opposed sides parallel to the direction of motion,

said actuator magnet having a magnetization vector perpendicular to the direction of motion of said actuator element,

field magnet means forming an interactive magnetic field with said actuator magnet,

said field magnet means comprising a pair of stationary parallel edge aligned permanent magnets on opposite sides of said actuator magnet,

said stationary field magnets having a magnetization vector perpendicular with said direction of motion and anti-par-

allel with said magnetization vector of said actuator magnet,

said stationary field of magnets having aligned front and rear edges, relative to the direction of motion, misaligned with front and rear edges of said actuator magnet and coacting therewith to produce magnetic edge forces whereby said actuator element is maintained at an initial stop position, and

actuating means for moving said actuator element in said direction of motion from said stop position to a second position wherein said magnetic edge forces accelerate said actuator in said direction of motion including

coil means surrounding said actuator magnet and carried by said actuator element for generating a magnetic field,

said coil means having a coil plane parallel with said stationary permanent magnets,

said coil means in said stop position having a first coil portion external to and a second coil portion within a high flux density region of said interactive magnetic field produced by said stationary permanent magnets,

said coil means being energizable for producing a release force whereby said actuator magnet is moved against said magnetic edge forces from said stop position to said second position in which said edge forces accelerate said actuator element in said direction of motion.

3. An actuator mechanism comprising

an actuator element movable in a linear direction including first and second actuator permanent magnets having opposed sides parallel to the direction of motion and aligned one behind the other,

said first and second actuator magnets having opposite magnetization vectors perpedicular to said direction of movement,

field magnet means forming an interactive magnetic field with said first and second actuator magnets,

said field magnet means comprising a first pair of stationary parallel permanent magnets on opposite sides of said first actuator magnet and a second pair of stationary parallel permanent magnets on opposite sides of said second actuator magnet,

said first pair of stationary field magnets having a magnetization vector perpendicular with said direction of motion and anti-parallel with said magnetization vector of said first actuator magnet,

said second pair of stationary field magnets having a magnetization vector perpendicular with said direction of motion and anti-parallel with said magnetization vector of said second actuator magnet,

said first and second pairs of stationary field magnets having mutually aligned front and rear edges, relative to the direction of motion misaligned respectively with front and rear edges of said first and second actuator magnets and coacting respectively therewith to produce magnetic edge forces whereby said actuator element is maintained at an initial stop position, and

actuating means for moving said actuator element from said stop position against said edge forces to a second position wherein said magnetic edge forces accelerate said first and second actuator magnets in said direction of motion including

coil means carried by said actuator means between said first and second actuator magnets for generating a magnetic field,

said coil means having a coil plane parallel with said first and second pairs of stationary field magnets,

said coil means in said stop position having a first coil portion in a high flux density region of said magnetic field of said first pair of stationary magnets and a second coil portion in a high flux density region of said magnetic field of said second pair of stationary magnets,

said coil means being energizable for producing a release force whereby said first and second actuator magnets are moved against said magnetic edge forces from said stop position to a second position wherein said edge forces accelerate said actuator element in said direction of motion.

4,343,240

TROLLEY

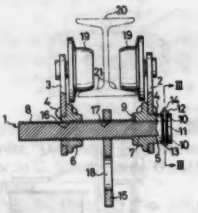
Yosaku Nishimura, Osaka, Japan, assignor to Vital Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 4, 1980, Ser. No. 203,905

Claims priority, application Japan, Mar. 11, 1980, 55-31357[U]

Int. Cl.³ B61B *3/00, 7/00*

U.S. Cl. 105—154 **6 Claims**



1. In a trolley having fixed and adjustable side plates supported in spaced relationship at a given distance by a stay rod passing through bushings fixed to the lower part of the side plates, a hanger plate coupled to the stay rod between said bushings, and rollers rotatably mounted on the upper part of the side plates, the improvement comprising the bushing on the fixed side plate is provided with a bearing hole, a journal formed at one end of the stay rod insertable into said hole for free rotation therein, said fixed side plate bushing and journal having diametrical aligned borings therethrough respectively, a pin having a head at one end removably inserted in said borings to couple said stay rod and fixed side plate bushing together an annular groove on the outer surface of said fixed side plate bushing aligned with said borings, an elastic holder releasably engaging in said groove and engaging said head of said pin to retain said pin in said borings, and an internal screw thread through the adjustable side plate bushing, and an external screw thread on the stay rod, other than the part formed as said journal, cooperatively engaging in said internal screw thread.

4,343,241

CONTROL DEVICE FOR SUCTION GRIPPER SYSTEMS IN SHEET GUIDING CYLINDERS

Otfried Rudolph, Dresden; Gunter Peter, Coswig; Karlheinz Fischer, Coswig, and Victor Hefftler, Coswig, all of German Democratic Rep., assignors to Veb Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 135,624, Mar. 31, 1980, abandoned. This application May 19, 1980, Ser. No. 151,112

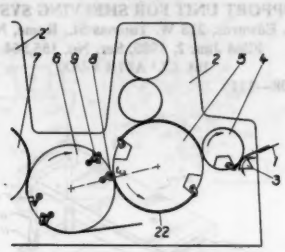
Claims priority, application German Democratic Rep., Apr. 2, 1979, 211939

Int. Cl.³ B41F *21/06*; B65H *5/14*

U.S. Cl. 101—231 **3 Claims**

1. A control device for a suction gripper system arranged on guiding cylinders of a sheet fed, face and back printing machine having at least two impression cylinders and at least one sheet guiding cylinder situated therebetween, the gripper system being operative for reversing a sheet about its rear edge, the device comprising a tumbler shaft mounted in the sheet guiding cylinder; a suction unit including a suction head cooperating with a sheet being processed and a suction arm supporting said suction head and mounted on a pivot having a pivot point, and a support arm secured to said tumbler shaft and having a free end supported on said pivot, said pivot being

spaced from said tumbler shaft, said suction arm being arranged for swingable movement about said pivot point so that the position of said suction head relative to a sheet being processed is controlled so that a sheet is taken over from the



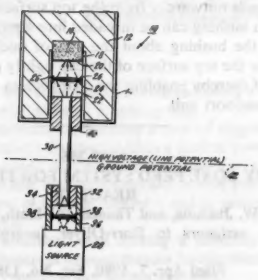
cooperating impression cylinder at a minimum deviation angle, said support arm being spring biased by a tension spring mounted between said support arm and said suction arm to provide for a self-adjustment of the swingable movement of said suction arm.

4,343,242

LASER-TRIGGERED CHEMICAL ACTUATOR FOR HIGH VOLTAGE ISOLATION

Steven Welk, Lansdale, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Apr. 28, 1980, Ser. No. 144,651
Int. Cl.³ F42C *19/00*
U.S. Cl. 102—201 **7 Claims**



1. An optically triggered chemical actuator system for actuating electrical apparatus at high potential relative to ground potential comprising:

a laser optical source means mounted at ground potential and operable to produce a high intensity optical signal;

a chemical actuator means fixed to electrical apparatus mounted at high potential relative to said ground potential and operable in response to a high intensity optical signal to cause an operation of said electrical apparatus;

and

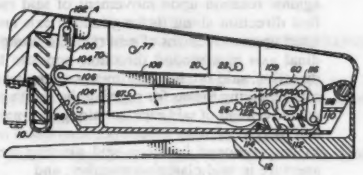
a single elongated electrically insulative optical fiber means having a first end thereof connected to said laser at ground potential and a second end thereof connected to said chemical actuator means at high potential for conveying said signal produced by said laser optical source means to said chemical actuator means.

4,343,243

PRINTER FOR IMPRINTING ZIP CODES AND THE LIKE

Dorothy I. Gentry, 1344 W. Joan de'Arc, Phoenix, Ariz. 85029, and Walter F. Ludwig, Phoenix, Ariz., assignors to Dorothy I. Gentry, Phoenix, Ariz.

Filed Apr. 21, 1980, Ser. No. 142,117
Int. Cl.³ B41J *9/00*
U.S. Cl. 101—96 **9 Claims**



1. A printer for imprinting inked characters upon an article, said printer comprising:

a. a base member having front and rear portions;

b. a clamping member overlying said base member and having front and rear portions, said clamping member having an aperture therein and including an inclined surface sloping toward the rear portion of said clamping member;

c. a printing lever overlying said clamping member and having front and rear portions;

d. pivot means for pivotally connecting the rear portions of said base member, said clamping member and said printing lever to each other;

e. a printing head mounted upon said printing lever adjacent the aperture in said clamping member, said printing head selectively providing raised type characters for imprinting the article;

f. an inked ribbon positioned between said printing head and the aperture in said clamping member;

g. first biasing means connected to said printing lever and to said clamping member for exerting a biasing force which biases said printing head away from the aperture in said clamping member;

h. second biasing means connected to said base member and to said clamping member for exerting a biasing force which biases the front portion of said clamping member away from the front portion of said base member, the biasing force exerted by said second biasing means being lesser than the biasing force exerted by said first biasing means;

i. depression of said printing lever toward said base member causing an article inserted between said base member and said clamping member to be clamped between said base member and said clamping member prior to passage of said raised type characters and said inked ribbon through the aperture in said clamping member for imprinting inked characters upon the article;

j. dispensing means supported by said clamping member on one side of the aperture for dispensing said inked ribbon;

k. receiving means supported by said clamping member on an opposite side of the aperture for receiving said inked ribbon, said receiving means including a shaft upon which said inked ribbon is wound; and

l. ribbon advance means coupled to said printing lever and to said clamping member and engaging said receiving means, said ribbon advance means causing a portion of said inked ribbon to be received by said receiving means each time said printing lever is actuated for positioning a fresh portion of said inked ribbon between said printing head and the aperture in said clamping member, said ribbon advance means comprising:

i. a link having two ends and pivotally connected at one of its ends to said printing lever;

ii. a roller-follower rotatably mounted to said link at the

other of its ends, said roller-follower abutting the inclined surface of said clamping member for rolling engagement therewith when said printing lever is depressed;

iii. a rack bar pivotally connected to said roller-follower, said rack bar having a longitudinal axis and having a toothed surface;

iv. ratchet gear means mounted to said clamping member adjacent said rack bar and engaged with the toothed surface thereof, said ratchet gear means remaining fixed against rotation upon movement of said rack bar in a first direction along its longitudinal axis and being rotated upon movement of said rack bar along its longitudinal axis in a second direction opposite to said first direction, said ratchet gear means engaging the shaft of said receiving means for rotating the shaft upon reciprocal movement of said rack bar along its longitudinal axis and thereby causing a fresh portion of said inked ribbon to be positioned between said printing head and the aperture in said clamping member; and

v. third biasing means connected to said rack bar for biasing said rack bar toward the front portion of said clamping member;

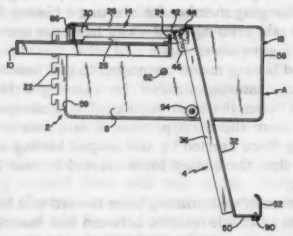
whereby, upon depression of said printing lever, said roller-follower travels along the inclined surface of said clamping member causing said rack bar to move toward the rear portion of said clamping member and, upon release of said printing lever, said third biasing means biases said rack bar toward the front portion of said clamping member for rotating said ratchet gear means.

4,343,244

PERIODICAL SHELF

Frederick J. Moriarty, Worcester, and Edmund T. Paquette, Shrewsbury, both of Mass., assignors to Wright Line Inc., Worcester, Mass.

Filed Apr. 17, 1980, Ser. No. 140,977
Int. Cl.³ A47B *5/00*
U.S. Cl. 108—1 **8 Claims**



1. A storage shelf for storing documents such as magazines, periodicals, pamphlets and the like comprising a frame assembly and a shelf assembly, movable between a first substantially horizontal storage position which permits access to documents stored thereon and a second inclined display position,

said frame assembly comprising a pair of opposite side plates, at least one member connecting and holding said side plates in parallel spaced relation, means for attaching said side frame assembly to a supporting stand, and a pair of substantially linear tracks attached to said side plates; and

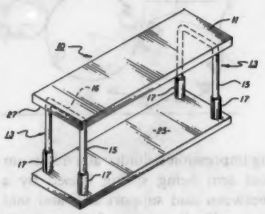
said shelf assembly comprising a shelf with means at one end for preventing a magazine or other document on said shelf from slipping off of said shelf when it is located with said one end facing down; and a pair of rollers carried by said shelf immediately therebelow and engaged with said tracks, said rollers being movable along said tracks so as to permit said shelf to be moved from the first position wherein it is disposed so as to be in a substantially horizontal plane and the second position wherein it is suspended by said rollers from said tracks with said one end facing down.

4,343,245

SUPPORT UNIT FOR SHELVING SYSTEM

Alwilda N. Edwards, 218 W. Thomas St., Rome, N.Y. 13440

Filed Jun. 2, 1980, Ser. No. 155,564
Int. Cl.³ A47B *47/00*
U.S. Cl. 108—111 **10 Claims**



1. A support unit for use in a shelving system that includes

a U-shaped bracket formed from a single piece of tubing having two spaced-apart parallel legs that are cojoined at their proximal ends by a straight perpendicular cross member,

a first wood screw securely affixed to the cross member and extended outwardly from the top surface thereof along an axis that is parallel with the axes of said legs whereby the screw can be threaded into a shelf by turning the bracket about the axis of the screw to draw the cross member tightly against the shelf

a pair of cup-like bushings, each of which is capable of slidably receiving the distal end of one of the bracket legs therein, and

a second wood screw securely affixed in the end wall of each bushing that is axially aligned with the bushing and which extends outwardly from the top surface thereof whereby each bushing can be threaded into a second shelf by turning the bushing about the axis of said second screw to draw the top surface of the cap tightly against the second shelf thereby enabling the two shelves to be cojoined by the support unit.

4,343,246

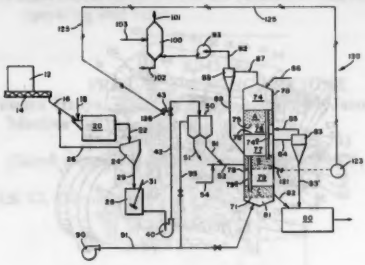
SLURRY COAL FEED SYSTEM FOR FLUIDIZED BED REACTOR

Walfred W. Jukkola, and Thomas D. Heath, both of Westport, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Apr. 7, 1980, Ser. No. 138,188
Int. Cl.³ F23G *7/00*
U.S. Cl. 110—222 **1 Claim**

1. A solid fuel preparation and feed system, wherein slurry coal is the fuel feed to be employed, for a multi-compartment fluidized bed calciner having a preheat compartment, a calcining compartment, a precooler compartment and a blower for supplying fluidizing air to said calciner, comprising a coal bin, a coal crusher having an inlet for water, means for withdrawing coal from said bin and forwarding it to said coal crusher, a slurry storage tank having agitating means therein, means for withdrawing coal from said crusher and forwarding it to said slurry storage tank, slurry coal feed guns mounted on said fluidized bed calciner for directing a flow of coal slurry into said calcining compartment, a pressurized distribution box between and connected by conduits to said slurry tank and said fuel guns for dividing the slurry flow from said slurry storage tank for delivery to a plurality of said fuel guns, means for diverting a portion of the air from said blower to said pressur-

ized distribution box to effect pressurization thereof and control means responsive to the temperature in said calcining



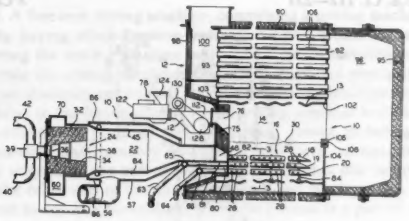
compartment to actuate valve means in said conduit between said distribution box and said slurry storage tank to adjust the flow of coal slurry to said feed guns as required by the system.

4,343,247

FLUIDIZED BED COMBUSTION METHOD AND APPARATUS

Robert A. Chronowski, Hartford, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Jun. 30, 1980, Ser. No. 164,033
Int. Cl.³ F23G *5/00*
U.S. Cl. 110—245 **3 Claims**



1. A fluidized bed combustion device including a quantity of particulate material defining a unitary bed,

a first gas distributor comprising a row of aligned elongate tubular members disposed within a central portion of said bed and a second distributor comprising a row of aligned elongate tubular members disposed in said bed and below said first row of tubular members and in general parallelism therewith,

said tubular members each having a plurality of axially spaced perforations formed therein for distributing fluidizing gases to plural zones within said bed,

gas delivery means and air delivery means respectively coupled to said first and second distributors,

control means coupled to said gas delivery means and to said air delivery means and operable to permit the flow of fluidizing gas to said first distributor and for preventing the flow of fluidizing air to said second distributor whereby the portion of the bed above the first distributor is fluidized while the remaining portion therebelow is quiescent, said control means also being operable to simultaneously affect the delivery of fluidizing gas to said first distributor and air to said second distributor, said distributors thereby cooperating to simultaneously fluidize the entire bed at least to the depth of said second distributor,

means for selectively delivering fuel to said bed,

said combustion device further including a start-up burner and a combustion chamber having a first end and on opposite end, said start-up burner being disposed at the first end of said combustion chamber and said gas delivery means being coupled to the opposite end of said combustion chamber whereby heated combustion products are delivered therefrom to said first gas distributor, and

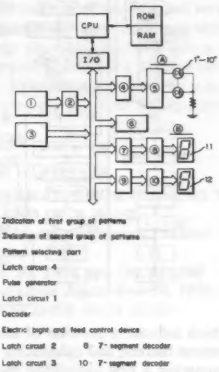
said air delivery means including a fan and a jacket surrounding said combustion chamber having openings formed therein, the inlet of said fan being connected to said jacket for drawing air through said openings and into the space between said jacket and said combustion chamber and then into the inlet of said fan.

4,343,248

PATTERN SELECTING SYSTEM OF AN ELECTRONIC SEWING MACHINE

Susumu Hanyu; Hideaki Takenoya, both of Hachioji, and Toshiro Fujimura, Musashino, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,868
Claims priority, application Japan, Apr. 20, 1978, 53/45904
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **1 Claim**


CPU
ROM
RAM
I/O
A - Indication of first group of patterns
B - Indication of second group of patterns
1 - Pattern selecting part
2 - Latch circuit 4
3 - Pulse generator
4 - Latch circuit 1
5 - Decoder
6 - Electric light and feed control device
7 - Latch circuit 2
8 - 7-segment decoder
9 - Latch circuit 3
10 - 7-segment decoder

1. A pattern selecting system for an electronic sewing machine, comprising an electronic memory storing a plurality of pattern data in a first group displayed on the machine and another plurality of numbered pattern data in a second group in which each pattern data number is a two-figure number; pattern selecting means including a plurality of push buttons each corresponding to displayed pattern data of the first group; and switching means having a first operating position in which it enables said push buttons to select any of the pattern data of the first group, and a second operating position in which it enables said push buttons to select any of the two-figure numbers corresponding to the pattern data of the second group.

4,343,249

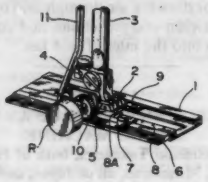
STITCH-LENGTH CORRECTING SEWING MACHINE AND STITCH-LENGTH MEASURING PRESSER FOOT ASSEMBLY USED THEREIN

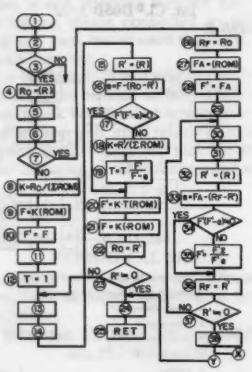
Hideaki Takenoya, and Eiichi Shomura, both of Hachioji, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,935
Claims priority, application Japan, Jul. 18, 1979, 54-90299; Jul. 18, 1979, 54-90300
Int. Cl.³ D05B *3/02, 35/12*
U.S. Cl. 112—158 E **9 Claims**

9. A sewing machine, comprising stitch forming means including a needle to effect sewing a fabric; feeding means for moving said fabric relative to said needle; a presser foot for pressing against said fabric, an electronic memory means for storing stitch control data for different stitch patterns; pattern

selecting means for selecting stitch control data for a pattern; a presser frame slidably attached to said presser foot, said presser frame being adapted to slidably move at a pitch equal to a feeding pitch of said fabric during the feeding thereof; sensor means disposed on said presser foot so as to engage said presser frame, said sensor means being adapted to produce electric





signals which indicate a position of said presser frame during said movement thereof; and calculating means, said calculating means comparing a first calculated feed control signal and a feed back signal provided by said sensor means during the stitching operation, said calculating means calculating from said latter compared signals a different control signal to substantially equal said first calculated control signal.

4,343,250

LOCK STITCHING AND OVER-LOCK STITCHING SEWING MACHINE

Susumu Hanyu; Noboru Kasuga, both of Hachioji; Kazumasa Hara, Tama, and Koichi Watanabe, Fussa, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

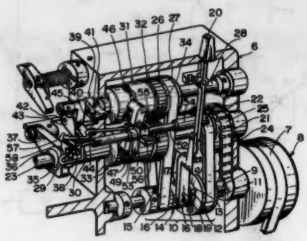
Continuation of Ser. No. 860,589, Dec. 14, 1977, Pat. No. 4,267,786. This application Nov. 26, 1980, Ser. No. 210,761

Claims priority, application Japan, Dec. 17, 1976, 51-1507497

Int. Cl.³ D05B *1/14*

U.S. Cl. 112—168 **2 Claims**

1. A lock stitching and over-lock stitching sewing machine having a frame and a primary driving means, comprising, in combination, a lock stitching device having a stitch forming part including a needle bar driving mechanism for forming lock stitches, said frame with said primary driving means forming an integral part of said lock stitching device; an over-lock stitching device having a stitch forming part spaced apart from said part for forming lock stitches and including a separate needle bar driving mechanism for forming overlock stitches, said frame with said primary driving means forming an integral part of said overlock stitching device; and a clutch device operated to selectively connect said primary driving means to said lock stitching device and to said overlock stitching device, said primary driving means including a drive motor and a rotatable shaft operatively connected to the drive motor, said clutch device being mounted on the rotatable shaft of the primary driving means and including an element operable for being displaced on the rotatable shaft between a first position



in which said element connects said rotatable shaft to said lock stitching device and a second position in which said element connects said rotatable shaft to said overlock stitching device.

4,343,251

SEWING MACHINE

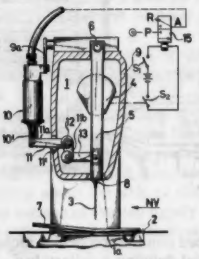
Heinz Goldbeck, and Helmut Frodermann, both of Bielefeld, Fed. Rep. of Germany, assignors to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Jun. 15, 1979, Ser. No. 48,807

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826426

Int. Cl.³ D05B *55/14, 55/10, 69/08*

U.S. Cl. 112—221 **3 Claims**



1. In a sewing machine having a worktable, means for advancing a workpiece to receive a stitch seam along said table past a stitch location, a head overhanging said location and formed with a housing, a needle bar vertically reciprocatable in said housing and carrying at least one needle, and drive means including an eccentric rotatable in said housing for vertically reciprocating said needle bar to sew said seam in said workpiece, the improvement which comprises a mechanism for forming a stitching lock against loosening for said seam at least at one end thereof, said mechanism comprising:

a guide for said bar in said housing in the form of a rocker suspended from a pivot in said housing and swingable transversely to the direction of reciprocation of said bar;

a pneumatic cylinder mounted on said head and having a piston rod;

a bell-crank lever having one side articulated to said piston rod of said cylinder and another side articulated to a link pivotally connected to said rocker for shifting same in said housing;

control means for operating said pneumatic cylinder only upon withdrawal of said needle from said workpiece, said control means including a three-port, two-position valve having one port connected to said cylinder, another port connected to a vent and a third port connected to a pres-

surized air source, said valve being electromagnetically operated; and

circuit means responsive to the position of said eccentric for operating said valve.

4,343,252

FREE ARM SEWING MACHINE

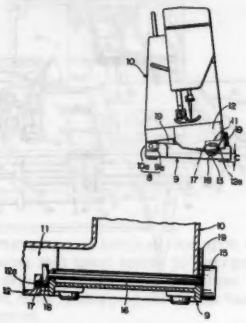
Susumu Hanyu, Hachioji, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Feb. 22, 1980, Ser. No. 123,793

Claims priority, application Japan, Feb. 27, 1979, 54/21302

Int. Cl.³ D05B *75/00*

U.S. Cl. 112—258 **3 Claims**



1. A free arm sewing machine, comprising a sewing machine body having stitch forming instrumentalities; a base for supporting the sewing machine body; pivot means turnably connecting the sewing machine body to the base; and positioning means manually operated to displace the sewing machine body relative to the base and to hold the sewing machine body in a predetermined position, said positioning means including a transverse shaft turnably arranged in said base, an operating dial secured to one end of the transverse shaft, a disc secured to the other end of the transverse shaft and having a pin secured to one side thereof, and a groove formed in a part of the free arm and being in engagement with the pin.

4,343,253

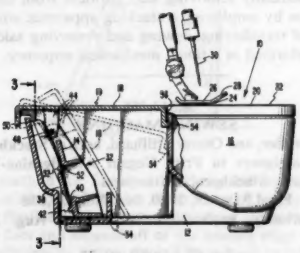
LID AND HINGE ARRANGEMENT FOR A CONVERTIBLE SEWING MACHINE

Ronald C. Iannarone, Hillside, N.J., assignor to The Singer Company, Stamford, Conn.

Filed May 23, 1979, Ser. No. 41,955

Int. Cl.³ D05B *73/10*

U.S. Cl. 112—260 **7 Claims**



1. In a sewing machine having a base, an elongated arm including a primary work supporting surface extending longitudinally from said base, and a support stand extending longitudinally from said base in spaced relation from said elongated arm, the invention comprising:

a lid including a supplemental work supporting surface thereon hingedly supported from said stand for movement between a substantially horizontal position, in which the supplemental work supporting surface serves as an extension of the primary work supporting surface on the elongated arm, and a lowered position that permits free arm sewing on the elongated arm;

rigid locking means interlocking the lid with the arm to hold the lid in the substantially horizontal position;

first means extending from said stand;

second means depending from the lid in spaced relation with the first means when said lid is hingedly fastened to said stand, one of the first and second means comprising substantially horizontal slot means open at one end facing away from the arm, the other end of said slot means terminating in a closed end, and the other of said first and second means comprising aperture means;

a hinge pin carried in said aperture means and received within said slot means and slidable laterally relative to the axis of the hinge pin with the extent of the slot means; and

spring means held by said one of said first and second means and extending adjacent the open end of said slot means for retaining said hinge pin within said slot means and urging the locking means into interlocking position but resiliently permitting the lid to be slid away from the arm within the extent of the slot means to allow disengagement of the locking means.

4,343,254

METHOD AND APPARATUS FOR CLOSING THE TOE END OF A HOSE

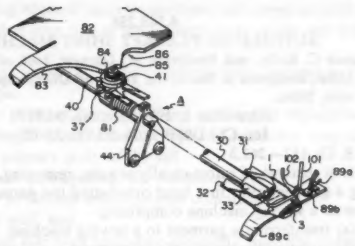
Osho Takatori, Nara, Japan, assignor to Takatori Machinery Works Ltd., Japan

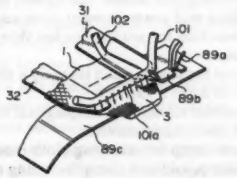
Filed Jan. 30, 1980, Ser. No. 116,960

Claims priority, application Japan, Jan. 30, 1979, 54-010204

Int. Cl.³ D05B *19/00, 21/00*

U.S. Cl. 112—262.2 **10 Claims**





1. Improved method for closing the toe end of a hose comprising

manually inserting a material hose inside out over a pair of fingers pieces with its toe section extending beyond the front ends of the said finger pieces,

automatically moving said front ends of said finger pieces away from each other in order to stretch and open said material hose,

automatically moving said front ends of said finger pieces with said toe section laterally towards the sewing region on a sewing machine whilst maintaining the stretched and open state of said material hose,

automatically moving said front ends of said finger pieces with said toe section across said sewing region along a prescribed locus including an arc section,

closing said toe section by said sewing machine during its travel along said prescribed locus,

blowing both terminals of said toe section by a first air jet nozzle in a direction parallel to said hose only when either of said terminals passes by a cloth clamper of said sewing machine, and

blowing said toe section by a second air jet nozzle during the closing process for stable and successful passage of said toe section across said sewing region.

2. Improved apparatus for closing the toe end of a hose comprising

a holding unit for holding a hose material and including a pair of elongated finger pieces arranged in a side-by-side relationship, and front end moving means for moving the front ends of said finger pieces away from and towards each other at prescribed timings,

a sewing machine including a needle, a cloth clamper and a needle plate arranged in its sewing region,

drive means for driving said holding unit for horizontal movement in a direction substantially normal to the longitudinal direction of said finger pieces,

a cam plate operationally coupled to said holding unit in order to urge the front ends of said finger pieces to travel across said sewing region on said sewing machine along a prescribed arc locus,

a first air jet nozzle arranged in said sewing region and including ejection mouths facing said needle plate, and

a second air jet nozzle arranged in said sewing region and including an ejection mouth facing said cloth clamper.

4,343,255

AUTOMATED PLACKET SHIRT MACHINE

James C. Kelly, and Frederick W. Garnett, both of Starkville, Miss., assignors to Starkville Tool and Die Company, Starkville, Miss.

Filed May 1, 1979, Ser. No. 34,917

Int. Cl.³ D05B *1/00, 33/00, 21/00*

U.S. Cl. 112—262.3 **32 Claims**

1. A method of automatically sewing, removing, and stacking a garment after first hand orientating the garment in relation to a sewing machine comprising:

(a) transferring a garment to a sewing machine;

(b) initiating the sewing of said garment at a point intermediate a first end and a second end of said garment and sewing from said point to said first end of said garment;

(c) cutting the threads from said sewing machine after sewing to said first end of said garment;

(d) clamping said second end of said garment; and

(e) pulling said sewn garment from said sewing machine.

23. A machine for sewing placket shirt fronts comprising in combination:

(a) means for aligning and layering a shirt front, placket and liner to form a garment;

(b) a transfer clamp for clamping and transferring a garment from one area to another;

(c) a sew clamp for receiving cloth received from said transfer clamp, said sew clamp including means for positioning said garment under a sewing machine intermediate the ends of said garment means for incrementally advancing said sew clamp in timed relationship with said sewing machine;

(d) a sewing machine;

(e) means for cutting the sewing thread after sewing; and

(f) means for removing said garment from said sewing machine.

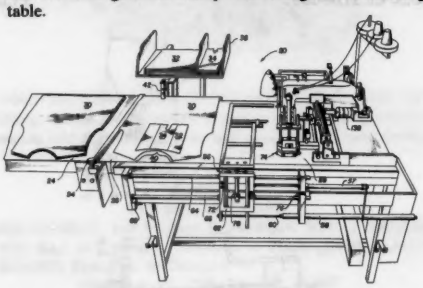
29. A stacking apparatus for removing garments from garment handling machinery comprising:

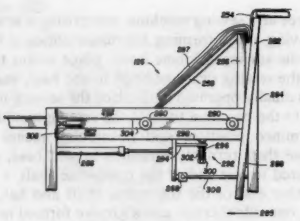
(a) a frame;

(b) a garment stacking table slideably mounted with respect to said frame;

(c) a garment clamp formed by the cooperation of one side of said slideably mounted garment stacking table with said frame wherein said clamp is disposed between said stacking table and said frame; and

(d) a raker bar pivotally mounted to said frame for travel between said garment clamp and said garment stacking table.





32. A method for automatically sewing, removing, and stacking a garment comprising:

(a) aligning and layering parts of a garment to be sewn by employing a layering guide means;

(b) mechanically transferring said garment to a sewing machine by employing a transfer clamp;

(c) sewing said garment from a point intermediate a first end and a second end of said garment and sewing from said point to said first end of said garment; and

(d) mechanically removing said garment from said sewing machine by employing a stacking apparatus wherein said steps of transferring, sewing and removing said garment are performed in a timed mechanical sequence.

4,343,256

SEWING MACHINE

Armin Neuweiler, and Otmar Stillhard, both of Steckborn, Switzerland, assignors to Fritz Gegauf AG Bernina-Naehmaschinenfabrik, Steckborn, Switzerland

Filed May 19, 1980, Ser. No. 150,836

Claims priority, application Switzerland, Aug. 24, 1979, 7717/79

Int. Cl.³ D05B *69/22*

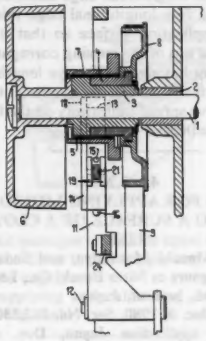
U.S. Cl. 112—275 **9 Claims**

1. A domestic sewing machine having a needle bar coupled to a drive shaft, comprising:

an electric motor, the speed of which is controlled by means of a pedal via a control circuit;

means for disengageably coupling said motor to the drive shaft of the machine, said coupling means including a spiral spring having one end driven by said motor and the other end fixed relative the drive shaft;

a catch device connected to the driven end of said spiral spring and thus resiliently coupled to said drive shaft; and



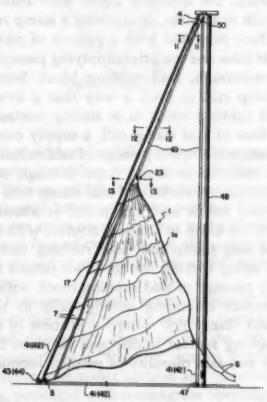
means for engaging said catch device upon release of said pedal causing said spiral spring to disengage said motor from the drive shaft and causing resilient braking of the drive shaft, thereby stopping the needle bar in a predetermined position.

4,343,257

WORKING SAILS AND METHODS FOR FURLING THEM WHILE ALOFT

William H. Stevenson, IV, Rte. 5, Box 532, Travelers Rest, Easton, Md. 21601

Filed Apr. 10, 1980, Ser. No. 139,105
Int. Cl.³ B63H 9/10
U.S. Cl. 114—104 **71 Claims**



1. The method for furling a working sail while the sail is aloft, the sail being of flexible sheet material, comprising

providing flexible sheet material extending along the sail from head to foot and located aft of the leading edge of the sail;

at least preliminarily furling the sail from leech to luff while the sail is aloft and the leading edge of the sail is attached to a support;

progressively forming said flexible sheet material into a tubular bag the length of which extends between the head and the foot of the sail and progressively disposing the sail in fully furled condition within the tubular bag as the bag is formed and while the leading edge of the sail remains attached to the support, the step of progressively forming said flexible sheet material into a tubular bag and progressively disposing the sail in fully furled condition within the tubular bag as the bag is formed is carried out by engaging a travelling furler over the aft portion of the sail adjacent one of the head and the foot of the sail and moving the furler progressively over the aft portion of the sail in a direction extending between the head and the foot; and

as the tubular bag is formed, progressively securing the bag against opening.

54. A feeder for progressively furling a working sail from head to foot while the sail is aloft comprising, in combination

an intermediate portion having a face having a configuration and dimensions such as to be slidably engageable with the leech portion of the sail during furling;

two flexible arms each extending from a different side of the intermediate portion so as to be disposed each on a different side of the sail during furling,

the arms being of substantial length and adapted to be connected to furling line means by which the feeder can be pulled downwardly to traverse the aft portion of the sail from head to foot; and

fastener means secured to the intermediate portion and exposed for connection of an unfurling line to the furler.

55. A triangular working sail comprising, in combination

a primary sail body of generally triangular plan form,

one long side of the primary body constituting the leech of the sail,

the other long side of the primary body being spaced rearwardly of the leading edge of the sail;

a luff portion comprising

two portions of flexible sheet material each having a leading edge and a trailing edge, said two portions being of the same shape and dimensions,

the trailing edges of said two portions each being secured to said other long side of the primary body of the sail; and

a luff tape,

the leading edges of said two portions being secured to the luff tape,

said two portions being free and unattached throughout their length between the luff tape and said other long side of the primary body of the sail.

60. In a sail stowage bag, the combination of

a bag body of flexible sheet material comprising

a bottom wall, and

an annular side wall extending upwardly from the bottom wall and defining an open top;

annular reinforcing means connected to the top of the bag body and dimensioned to hold the top of the bag open;

flexible partition means comprising a single piece of sheet material extending from near the top of the bag body toward the bottom to divide the interior of the bag into two upright compartments open at the top;

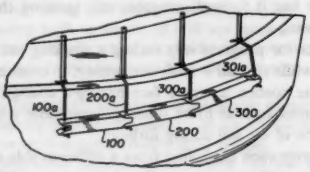
two pairs of releasable fasteners,

the fasteners of each pair being secured to the bag adjacent the top of a different one of said compartments;

two additional fasteners secured to the side wall of the body adjacent the annular reinforcing means at points spaced across the open top of the body along a line generally transverse to the partition means; and

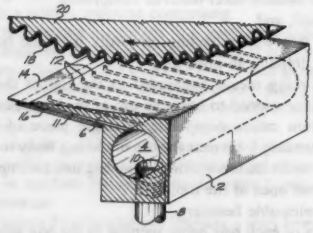
line means operatively connected to the top of the partition means and releasably attachable to one of said additional fasteners to draw the upper portion of the partition means across the open top of the corresponding one of the two compartments.

4,343,258
BOAT BUMPERS
Mark Belvedere, c/o Mrs. Sarubbi, 5063 NW. 6th Ct., Delray Beach, Fla. 33445
Continuation-in-part of Ser. No. 59,690, Jul. 23, 1979, abandoned. This application Dec. 3, 1979, Ser. No. 99,799
Int. Cl.³ B63B 59/02
U.S. Cl. 114—219 1 Claim



1. In combination, a plurality of suspension lines and a plurality of endwise interconnected elongate resilient boat bumper units extending transversely to said lines; each said bumper unit having a male protuberance at one end and a complimentary female socket at the other end, the sockets and protuberances of successive bumper units being mated with each other in a particular relative angular orientation, each said socket having two holes therethrough aligned transversely of the bumper unit elongate axis providing a straight transverse passage through the socket, and each said protuberance having a hole therethrough located to interconnect and align with said two holes of a socket mated therewith when the protuberances and sockets are mated in said particular angular orientation, whereby said protuberances and sockets mate only in said relative angular orientation wherein all said holes are interconnected and aligned; each of said suspension lines passing through the aligned holes of a respective set of mated protuberances and sockets to interlock successive bumper units into an assembly and to suspend the assembly of bumper units.

4,343,259
APPARATUS FOR APPLYING ADHESIVE IN CORRUGATED BOARD MANUFACTURE
Ronald J. McConnel, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Jul. 11, 1980, Ser. No. 167,617
Int. Cl.³ B05C 5/02, 11/04
U.S. Cl. 118—44 10 Claims

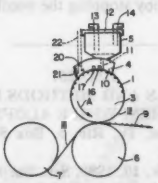


1. In a corrugated container board manufacturing apparatus having means for forming corrugations in a generally planar corrugating medium in which the corrugations have a predetermined tip-to-tip distance between adjacent flutes, and means for applying an adhesive to the flute tips, the improvement which comprises:

a. an elongate adhesive extrusion head operatively associated with the machine at a location downstream from the point at which the corrugations are formed, said head being in communication with a source of liquid adhesive material, said head further being of a size and shape that can be located closely adjacent to the moving corrugated medium in order to transfer adhesive thereto from an application surface on the head, and

b. a relatively thin, flexible spreader element located parallel to and downstream from the application head, said element having one longitudinal edge attached to the extrusion head and a free longitudinal edge raised above the level of the application surface so that it is in wiping contact with the tips of the moving corrugated flutes, said spreader element having an effective length which is less than the tip-to-tip distance between adjacent flutes so as to improve adhesive spread uniformity on the flute tips without significant adhesive removal.

4,343,260
APPARATUS FOR APPLYING LIQUID STATE MATERIAL ONTO A SURFACE OF A CLOTH OR THE LIKE
Mikiharu Yajima; Masuki Masumiya, and Sadao Obe, all of Itami, Japan, assignors to Nitto Boseki Co., Ltd. and Nittobo Itamikako Co., Ltd., both of, Japan
Filed Dec. 3, 1980, Ser. No. 212,530
Claims priority, application Japan, Dec. 4, 1979, 54-168561[U]
Int. Cl.³ B05C 1/08
U.S. Cl. 118—204 4 Claims



1. An apparatus for applying liquid state material onto a surface of a cloth or the like, comprising a stamp roll having a peripheral surface provided with a pattern of pits, a rubbing block having at least one material supplying passage extending vertically therethrough, said rubbing block being disposed above said stamp roll in such a way that a lower rubbing surface of said rubbing block is in sliding contact with said peripheral surface of said stamp roll, a supply container connected to said material supply passage of said rubbing block for supplying the material in liquid state through said rubbing block to said peripheral surface of said stamp roll, and a pressure roll disposed below said stamp roll in abutting relation thereto to carry the cloth in intimate contact with said peripheral surface of said stamp roll, said rubbing surface of said rubbing block being formed in the down stream side of said material supply passage of said rubbing block with a plurality of parallel recesses extending orthogonally to the rotating direction of said stamp roll where a portion of said downstream side rubbing surface is disposed between the material supply passage and said plurality of parallel recesses.

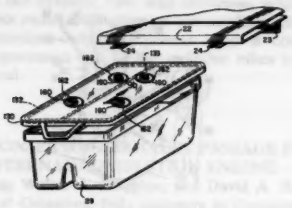
4,343,261
ANIMAL CAGING SYSTEM
William R. Thomas, 187 Main St., Conyngham, Pa. 18219
Continuation-in-part of Ser. No. 76,698, Sep. 18, 1979, abandoned. This application Nov. 12, 1980, Ser. No. 206,058
Int. Cl.³ A01K 1/03
U.S. Cl. 119—15 16 Claims

1. A contagion-safe animal housing system, comprising:

a plurality of animal cages of material impervious to air, the cages mounted in a rack, the rack having internal ducting communicating with air supply and exhaust openings for the cages;

cage lids sealingly fittable on each of the cages, the lids having air passages corresponding to the air supply and exhaust openings in the rack;

airflow controlling means located in the lids, the airflow controlling means operable by contact with the rack to



open the air passages in the lids upon mounting the cages and biased to close the air supply and exhaust upon withdrawing the cages; and,

means for supplying and exhausting air to and from said ducting in the rack.

4,343,262

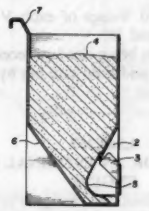
LABORATORY RAT FEEDER

John Hunziker, Jr., Pine Bluff, Ark., assignor to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Mar. 26, 1981, Ser. No. 247,713

Int. Cl.³ A01K *5/00*

U.S. Cl. 119—18 **7 Claims**



1. A feeding device for laboratory rats comprising a feed storage hopper including wall means defining a chamber, closed at its bottom, which chamber holds a quantity of animal feed, said chamber having an upper portion, a lower portion, a feed inlet means at its upper portion and a feeding opening in the lower front face of the chamber above the closed bottom, a back panel sloped at an angle of about 35° with respect to its vertical plane,

generally U-shaped feeding means mounted in the feeding opening in the lower portion of said chamber for allowing restricted contact of the feed by the rat, said feeding means comprising a "floating" screen firmly affixed at its upper end to said upper portion and covering said feeding opening, provided with rectangular openings, sloped from the top of said feeding opening toward the center and downwardly at an inclined angle of about 60° with respect to its horizontal plane sufficient so that the weight of the feed thereabove forces a continual collapsing thereof downwardly along said sloping back panel as the feed is consumed from below, the lower portion of the screen extending horizontally and being unattached at the end thereof to allow slight movement and flexing thereof by the rat permitting faster breaking up of any caked food, thus allowing the rat to ingest the feed resting on the upper screen portion, the mesh size of the screen openings being sufficient to support powdered mash feed without falling through the openings while permitting the rat to insert his tongue through the openings for feeding purposes, and

partitioning means connected to said feeding means for preventing the rats from bodily entry to the feeder thus precluding possible contamination of the feed through feces or urine.

4,343,263

SIDE WALL STRUCTURE FOR AN ANIMAL STALL

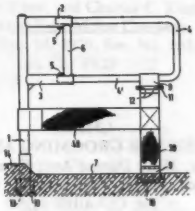
Martin Glöggler, Memelstrabe 4, D-7910 Neu-Ulm, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 151,456

Claims priority, application Fed. Rep. of Germany, May 29, 1979, 2921821

Int. Cl.³ A01K *1/00, 29/00*

U.S. Cl. 119—27 **17 Claims**



16. A sidewall structure for an animal stall comprising:

an upright support means located at a front part of said stall and having a lower end located in a floor of said stall;

a cantilever wall element for defining a sidewall of said stall, supported by support means above the floor at a predetermined height and extending backwardly from said support means to the back of said stall;

a first flexible belt spaced from said support means and extending vertically from said cantilever to said floor;

means for fastening a lower end of said first belt to said floor;

means for adjustably fastening an upper end of said first belt to said cantilever;

at least one second flexible belt spaced above said floor and below said cantilever, extending longitudinally from the support means to said first belt;

means for fastening said at least one second belt to said first belt; and

means for movably fastening said at least one second belt to said support means.

4,343,264

ANIMAL WATERING APPARATUS

Kenneth L. Schafer, Rte. 3, Box 73, Le Sueur, Minn. 56058, and Maurice L. Peterson, Kerkhoven, Minn. 56252

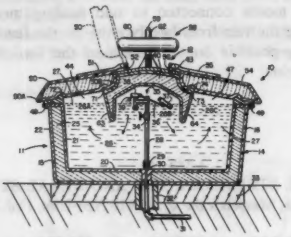
Filed Jun. 16, 1980, Ser. No. 159,812

Int. Cl.³ A01K *7/02*

U.S. Cl. 119—73 **33 Claims**

25. An animal watering apparatus comprising: a tank having wall means defining a chamber for accommodating water, a top wall mounted on said wall means covering said chamber, said top wall having a drinking opening open to the chamber providing animal access to the water in the chamber, cover means for closing the drinking opening, means for mounting the cover means on the top wall for movement to an open position in uncovered relationship relative to the drinking

opening, and a bumper assembly mounted on the top wall to limit pivotal movement of the cover means toward the open



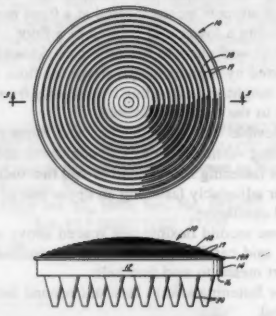
position and urging the cover means toward the closed position when the animal moves away from the drinking opening.

4,343,265

BRUSH FOR GROOMING ANIMALS

Elmer Belschner, 23510 Durand Ave., Kansasville, Wis. 53139

Filed Oct. 20, 1980, Ser. No. 198,703
Int. Cl.³ A01K *13/00*
U.S. Cl. 119—83 **5 Claims**



1. An animal grooming brush comprising:

a solid cylindrical body portion having a flat lower surface and a dome-shaped upper surface, said dome-shaped upper surface being provided with at least one integrally formed projection extending outwardly beyond said cylindrical body portion and along a plane substantially located midway between the top of said dome-shaped upper surface and said flat lower surface to facilitate gripping of said brush, said body portion having a straight peripheral outer edge surface axially extending between said outwardly extending projection and said flat surface, said dome-shaped upper surface being further provided with a plurality of integrally formed concentrically arranged projections to facilitate gripping of said brush;

and a plurality of solid conically shaped flexible teeth integrally formed with said body portion and extending from said lower surface, each tooth having a predetermined length and the centerline of each tooth being spaced from that of an adjacent tooth by a distance substantialy equal to said predetermined length.

4,343,266

PIG HOLDING DEVICE

Brian J. Moeller, R.R. 1, Somers, Iowa 50586

Filed Dec. 19, 1980, Ser. No. 218,216
Int. Cl.³ A61D *3/00*
U.S. Cl. 119—98 **4 Claims**

3. A device for holding a pig above a support surface comprising:

a U-shaped frame having a cross-member and two leg members;

support means connected to said U-shaped frame and holding said U-shaped frame in approximately a horizontal position suspended in spaced relation above said support surface;

a pair of V-shaped members, each being fixed to one of said leg members of said U-shaped frame, and each having two V-legs joined at a V-apex;

said V-apexes of said V-shaped members pointing toward one another;

said V-members being disposed at an angle of approximately 40° with respect to horizontal with said V-apexes pointing downwardly;

the angle between said V-legs of each V-shaped member being between 20° and 30°;

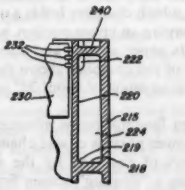
said V-shaped members being sized to receive and grasp the rear legs of said pig and hold said pig by said rear legs in upside down position.

4,343,267

CYLINDER BLOCK FOR AN INTERNAL COMBUSTION ENGINE

Terrence M. Shaw, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 3, 1979, Ser. No. 99,535
Int. Cl.³ F02F *1/10*
U.S. Cl. 123—41.81 **6 Claims**



1. A cylinder block for a reciprocating piston internal combustion engine comprising a cooling jacket defined by a continuous side wall and a floor section subtending same; at least one cylinder tube having a wall of predetermined thickness as measured along a radius extending from an interior of the tube wall to an exterior of the tube wall and being connected to and extending upwardly from said floor section and surrounded by said jacket, said cylinder tube being substantially axially supported only by the jacket floor section and substantially radially supported only by a plurality of independent circumferetially spaced radially extending supports connecting the exte-

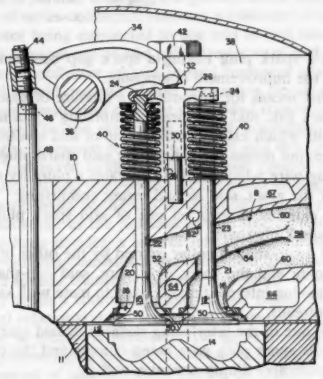
rior of said tube wall to an adjacent portion of the jacket side wall, the cylinder tube being substantially isolated from said jacket but for the supports and jacket floor section, said supports being disposed adjacent the uppermost end of said tube where the piston assumes a top dead center position, each support in transverse cross section with respect to a longitudinal axis having a width and thickness of substantially the same dimension as the cylinder tube wall thickness, wherein said supports resists radial deflection yet are axially compliant to minimize distortions when a cylinder head is compressed against the uppermost end of the cylinder tubes to form a combustion seal.

4,343,268

ENERGY CONSERVING EXHAUST PASSAGE FOR AN INTERNAL COMBUSTION ENGINE

John H. Stang; Walter A. Brighton, and David A. Ruthmansdorfer, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 7, 1979, Ser. No. 46,222
Int. Cl.³ F01L *1/26*
U.S. Cl. 123—90.4 **13 Claims**



8. Exhaust passage apparatus for directing the flow of exhaust fluid within an internal combustion engine including first and second exhaust poppet valves having separate valve stems which may be simultaneously operated to open corresponding first and second exhaust valve ports shaped to form a pair of exhaust gas streams moving generally parallel to one another in a first direction, said exhaust passage apparatus comprising

(a) exhaust passage forming means for receiving and joining the pair of exhaust gas streams formed by the exhaust ports and for redirecting the joined gas streams along a path which has a second direction different from the first direction and which intersects the stem of the second poppet valve at a point downstream from the first poppet valve, said exhaust passage forming means containing an exhaust passage extending from the exhaust valve ports to a joining area substantially downstream of the stem of the second poppet valve; and

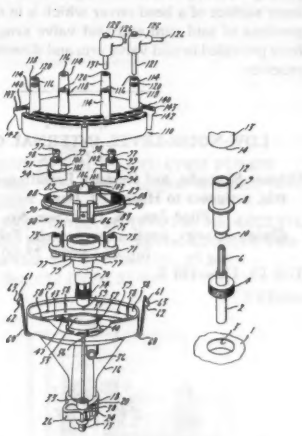
(b) guide means positioned within said exhaust passage and integral with said exhaust passage forming means for redirecting the pair of exhaust gas streams toward the second direction and for maintaining the pair of exhaust gas streams substantially separate until the pair of exhaust gas streams are both moving parallel to one another in the second direction prior to reaching said joining area defined by said exhaust passage forming means, said guide means including a vane positioned within said exhaust passage for dividing the exhaust passage into a pair of sub exhaust passages for receiving, respectively, the pair of exhaust gas streams formed by the exhaust valve ports, said vane extending from a point adjacent the exhaust valve ports to a point just upstream from said joining area, and said vane contains a central slot dimensioned to provide substantial clearance around the stem of the second poppet valve and to provide limited communication between said sub exhaust passages, said central slot extending from a point upstream of the stem of the second poppet valve to the joining area, whereby exhaust gases from the exhaust gas stream which are joined within said central slot may be moved into the joining area without being returned to said sub exhaust passages.

4,343,269

IGNITION DISTRIBUTOR ROTOR ALIGNMENT AND LOCK-DOWN ASSEMBLY

David H. Fox, Ann Arbor, and Charles C. Kostan, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1979, Ser. No. 103,673
Int. Cl.³ F02P *7/02*
U.S. Cl. 123—146.5 A **13 Claims**



1. An ignition distributor rotor alignment and lock-down assembly comprising:

a distributor housing adapted for non-rotational mounting on an internal combustion engine and defining a rotor shaft housing along a central axis and a commutation cavity at one end of said shaft housing;

a rotor shaft mounted for rotation in said shaft housing and adapted for rotational driving connection to said engine about said central axis;

a commutation rotor mounted on said rotor shaft for rotation therewith;

means for mounting said commutation rotor on said rotor shaft in a selected angular disposition about said axis with respect to a predetermined point on said distributor housing and a corresponding timing position of said engine, wherein said rotor is circularly configured with at least one arcuate aperture having outer and inner arcuate side walls, one of which is tapered with respect to said central axis and said mounting means includes a correspondingly tapered wedge element configured to fit in a plurality of locations within an associated arcuate aperture and means for attaching said wedge element to said rotor shaft.

4,343,270

INTERNAL COMBUSTION ENGINE

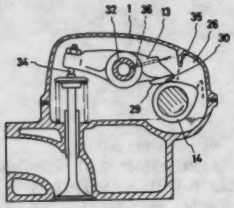
Toshihiko Kawabe, Takatsuki, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed Apr. 25, 1980, Ser. No. 143,909

Claims priority, application Japan, Sep. 3, 1979, 54-121532[U]; Sep. 3, 1979, 54-121534[U]; Dec. 6, 1979, 54-168820[U]

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 V 1 Claim



1. An internal combustion engine having on a cylinder head a valve mechanism consisting of a cam and a valve arm, comprising a rib type oil receiver provided on that portion of the inner surface of a head cover which is in opposition to contact portions of said cam and said valve arm, and an oil ejection bore provided in said valve arm and directed to said rib type oil receiver.

4,343,271

LOW-NOISE-LEVEL INTERNAL COMBUSTION ENGINES

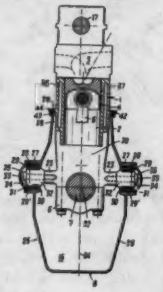
Othmar Skatsche, and Gerhard Feichtinger, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Jan. 16, 1980, Ser. No. 112,429

Claims priority, application Austria, Feb. 7, 1979, 925/79

Int. Cl.³ F02B *77/00*

U.S. Cl. 123—198 E 8 Claims



1. An internal combustion engine comprising, an engine unit support containing parts directly affected by sound vibration, namely a cylinder head, cylinders, pistons, connecting rods, crankshaft main bearings and crankshaft, and a crankcase connected with said engine unit support by sound insulating means, the improvement wherein said sound insulating means serves as a power transmitting support of said engine unit support on said crankcase and is disposed in the immediate vicinity of the crankshaft axis between opposing sides of said engine unit support and lateral walls of said crankcase, and said means comprising cylindrical elastic vibration absorbing elements mounted within said lateral walls of said crankcase and being readily accessible from outside said crankcase.

4,343,272

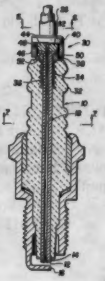
DEVICES FOR SUPPLEMENTING CONVENTIONAL LIQUID FUELS IN INTERNAL COMBUSTION ENGINES WITH GASEOUS FUEL SUPPLEMENTS

Alan C. Buck, 6073 Nauru St., Cypress, Calif. 90630

Filed Mar. 12, 1980, Ser. No. 129,791

Int. Cl.³ F02P *13/02*

U.S. Cl. 123—297 2 Claims



1. In a spark plug having a spark gap between two electrodes, the improvement comprising:

(a) first means for introducing a mixture of gases into said spark gap, said first means comprising a plurality of conduits which extend through one of said electrodes, and

(b) second means for connecting said spark plug to a spark plug wire which likewise contains a plurality of conduits for the gases, said second means comprising:

(i) external threads on one of said spark plugs and the spark plug wire,

(ii) a cup-shaped collar carried by the other of said spark plug and the spark plug wire, said cup-shaped collar having internal threads sized to mate with said external threads,

(iii) one of the interfacing surfaces of said spark plug and the spark plug wire being convex and the other being correspondingly concave, and

(iv) the surface of the conductor in said spark plug being flared to provide the maximum possible contact with the interfacing surface of the conductor in spark plug wire.

4,343,273

IGNITION SYSTEM WITH OVERRUN PREVENTION

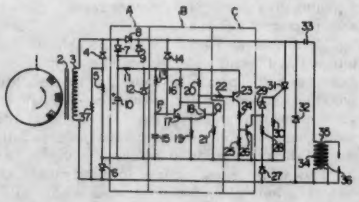
Tadasige Kondo; Susumu Ono, both of Tokyo, and Kenichi Takata, Musashino, all of Japan, assignors to Kioritz Corporation, Japan

Filed Oct. 5, 1981, Ser. No. 309,155

Claims priority, application Japan, Oct. 15, 1980, 55-146867[U]

Int. Cl.³ F02B *0/00*

U.S. Cl. 123—335 5 Claims



1. An ignition system capable of preventing an overrun of an engine in which a main capacitor is charged by one component of an electromotive force of a magneto and the charge stored

in said main capacitor is discharged through a primary winding of an ignition coil by triggering a main thyristor by an ignition signal derived from the other component of said electromotive force to induce a high voltage necessary to ignite an engine across a secondary winding of said ignition coil, said ignition system comprising;

a switching circuit connected to a gate circuit of said main thyristor and having a switching transistor for preventing said ignition signal from being applied to a gate of said main thyristor, a transistor for driving said switching transistor and a series circuit of a pair of resistors, the junction of said pair of resistors being connected to a base of said switching transistor,

a constant voltage circuit connected in parallel with a generator coil of said magneto, and

a control circuit for actuating said switching circuit for a predetermined time period from a predetermined time point,

said control circuit including an integration circuit connected in parallel with said constant voltage circuit and having a series circuit of a resistor and a capacitor, a pair of first and second transistors each connected in parallel with said integration circuit and a voltage divider connected in parallel with said integration circuit and having a pair of series-connected resistors, a collector of said first transistor being connected to one end of said integration circuit through one of said pair of resistors of said voltage divider, a collector of said second transistor being connected to said one end of said integration circuit through a resistor, emitters of said first and second transistors being connected to the other end of said integration circuit through a common resistor, a base of said first transistor being connected to the junction of said resistor and said capacitor of said integration circuit, a base of said second transistor being connected to said collector of said first transistor and to the junction of said pair of resistors of said voltage divider, a base of said driving transistor for said switching transistor being connected to said collector of said second transistor through a resistor,

whereby when a rotational speed of said engine exceeds a normal rotational speed region and enters an overrunning region to shorten a period of said ignition signal so that said ignition signal partially overlaps the constant conduction period of said switching circuit, an ignition timing is retarded by a crank angle of said engine corresponding to the overlapping period to reduce the rotational speed of said engine.

4,343,274

INJECTION PUMP CONTROL ARRANGEMENT

Franz Butscher, Friedrichshafen, Fed. Rep. of Germany, assignor to MTU Motoren - und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

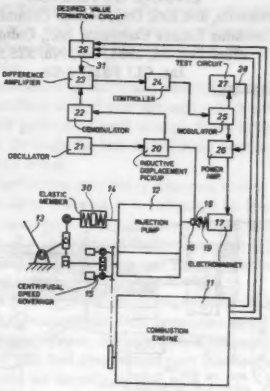
Filed Mar. 3, 1980, Ser. No. 126,696

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1979, 2908235

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—357 **8 Claims**

1. A control arrangement for a fuel injection pump of an internal combustion engine, the control arrangement including a control rod means for adjusting a required feed rate of the injection pump, a correcting means for determining a required power of the internal combustion engine, a centrifugal governor means for maintaining limiting speeds of the internal combustion engine, the correcting means and centrifugal governor means being operatively effective on the control rod means for adjusting a required feed rate of the injection pump, and means for limiting a displacement of the control rod means in dependence upon at least one predetermined variable of the internal combustion engine, characterized in that the limiting means includes an electromagnetic means having a core adapted to cooperate with a free end of the control rod means, means are provided for sensing a position of the control rod means and for providing an output signal indicative of the sensed position, and in that electronic circuit means are provided for processing the output signal of said sensing means at least one signal



defining an operating condition of the internal combustion engine and for effecting a metered activation of the electromagnet.

4,343,275

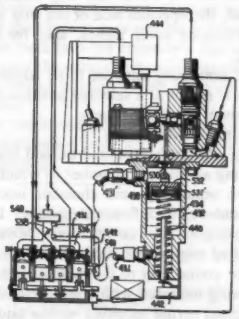
ELECTROMAGNETICALLY ACTUATED PUMPS

Willem Brinkman, Velp, Netherlands, assignor to Holec, N.V., Hengelo, Netherlands

Division of Ser. No. 560,771, Mar. 21, 1975, Pat. No. 4,022,174, and Ser. No. 766,549, Feb. 7, 1977, Pat. No. 4,210,116. This application Oct. 22, 1979, Ser. No. 87,146

Int. Cl.³ F02M *51/04*

U.S. Cl. 123—382 **3 Claims**



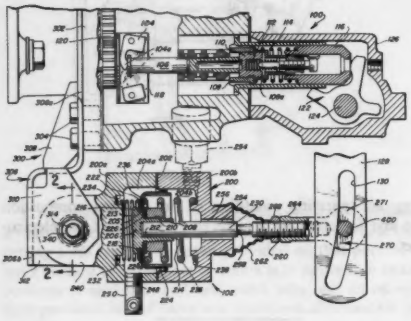
1. An injector for giving off fuel to at least one atomizer of a combustion engine comprising at least one pump communicating with said atomizer and at least one control-member displaceable in dependence upon the pressure in the inlet branch pipe of the combustion engine for regulating the quantity of fuel to be atomized by the atomizer, characterized in that the natural frequency of the mass spring system of the control-member and of the elements coupled herewith is appreciably lower than the frequency of the pressure variations in the inlet branch pipe at a low engine speed due to the suction of air by the combustion cylinders.

4,343,276

TURBOCHARGER BOOST FEEDBACK CONTROL FOR ENGINE GOVERNOR

Salim A. Jaliwala, and Eric Day, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jan. 16, 1981, Ser. No. 225,526
Int. Cl.³ F02D 1/06
U.S. Cl. 123—383 6 Claims



1. A turbocharger boost feedback control unit for use with a governor of an associated engine wherein the governor includes rotating flyweights interacting through a movable fuel control shaft with an opposing force of a governor spring, the relative forces due to the rotation of the flyweights and compression of the spring determining the position of the shaft and the fuel flow to the associated engine, the governor spring abutting one side of a movable stop axially aligned with the control shaft, the opposite side of the stop being engaged by a pivotally mounted lever means, said feedback control unit comprising:

a control arm being adapted to be adjustably connected to the lever means at a selected position relative to the pivotal axis of the lever means;

a fixedly mounted bracket;

a housing adjustably mounted on said bracket, said housing including an interior chamber in which is disposed a diaphragm separating said chamber into first and second subchambers, said first subchamber having a port for connecting to the turbocharger boost pressure of the associated engine, and said second subchamber having a port for connecting to the atmosphere;

a first spring mounted within said first subchamber;

and a second spring mounted within said second subchamber;

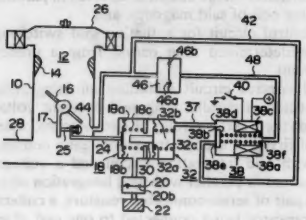
said control arm including a shaft fixedly mounted to said diaphragm and extending therefrom into said second subchamber and out through an axially aligned opening formed in said housing, and a connecting member having a first portion adjustably secured to the outwardly extending end of said control arm shaft and a second portion adapted to be connected to the lever means at the selected position whereby the speed droop of the associated engine is controlled by the location on the lever means of the selected position of connection between the lever means and the second portion of said connecting member.

4,343,277

THROTTLE VALVE OPENING CONTROLLER

Hidemi Ohnaka, Susono, and Norikatsu Ishikawa, Mishima, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 30, 1980, Ser. No. 164,272
Claims priority, application Japan, Jul. 20, 1979, 54/92929
Int. Cl.³ F02D 11/08, 9/08; F02M 19/12
U.S. Cl. 123—389 4 Claims



1. A throttle valve opening controller for applying varying retarding forces against closing force of a throttle valve depending on the operating condition of engine, said controller comprising:

a first diaphragm device for applying retarding forces against the closing force of the throttle valve when said valve is to be quickly closed, comprising a first diaphragm which is moved in association with the throttle valve when the throttle valve opening is smaller than a predetermined value, a spring for urging said first diaphragm with a force smaller than the closing force of the throttle valve, and a first diaphragm chamber which is formed on the rear side of said first diaphragm and to which atmospheric pressure is admitted;

a second diaphragm device connected to said first diaphragm device, comprising a second diaphragm having a stopper for controlling the position of said first diaphragm, a spring for urging said second diaphragm with a force larger than the closing force of the throttle valve, and a second diaphragm chamber formed in the rear of said second diaphragm;

a solenoid valve communicated with said second diaphragm chamber and an intake manifold for admitting atmospheric pressure to said second diaphragm chamber when said engine is cool, and intake vacuum in said intake manifold to said second diaphragm chamber when said engine has warmed-up;

said solenoid valve being communicated with said second diaphragm chamber and a portion of said intake manifold directly downstream of the throttle valve for admitting nearly atmospheric pressure to said second diaphragm chamber when said engine is cool, and intake vacuum in said intake manifold to said second diaphragm chamber when said engine has warmed-up;

a first passage directly connected between said solenoid valve and said portion of said intake manifold;

a second passage directly connected between said solenoid valve and said second diaphragm chamber; and

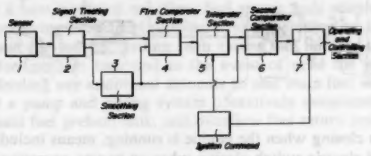
a third passage connected between said solenoid valve and said portion of said intake manifold through a transmitting valve.

4,343,278

CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Masaharu Asano, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jul. 30, 1980, Ser. No. 173,757
Claims priority, application Japan, Jul. 31, 1979, 54/97940
Int. Cl.[3] G01L *23/22*; F02P *5/04, 5/14*
U.S. Cl. 123—425 7 Claims



1. A control device for an internal combustion engine comprising:

detecting means for detecting a signal corresponding to a particular frequency component caused by the knocking from pressure changes produced in the combustion chamber or vibrations caused by the pressure changes;

signal treating means for rectifying the detected signal from said detecting means;

smoothing means for smoothing the rectified signal from said signal treating means to obtain a first reference signal;

a first comparing means for comparing said first reference signal and said rectified signal;

integrating means for integrating the output signal of said comparing means;

a function generator for generating a second reference signal in response to said first reference signal;

a second comparing means for comparing the integrated signal from said integrating means and said second reference signal;

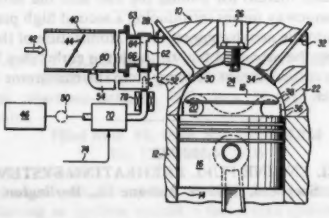
operating and controlling means for feedback-controlling at least one of an ignition timing, an exhaust gas recirculation flow rate, a fuel injection amount and a fuel injection timing in response to the output signal from said second comparing means.

4,343,279

CHARGE FORMING DEVICE FOR INTERNAL COMBUSTION ENGINE

Richard F. Blaser, 14416 Innsbruck Ct., Silver Spring, Md. 20906

Filed Nov. 2, 1979, Ser. No. 90,683
Int. Cl.[3] F02M *39/00*
U.S. Cl. 123—445 18 Claims



1. In a charge forming device for an air breathing internal combustion engine including at least one variable working chamber, an intake manifold system for supplying individual air and fuel charges to an intake port of each working chamber, the manifold system including an air throttle device; and a periodically opening and closing intake valve for controlling the flow of air and fuel charge through the intake port, the improvement comprising:

a. a fuel distribution port in the intake manifold system facing towards and located closely adjacent the intake port and through which all of the fuel portion of each charge flows;

b. a venturi restriction in the intake manifold system adjacent the fuel distribution port and through which substantially all of the air portion of each charge flows to induce suction of fuel through the fuel distribution port during each engine intake event;

c. said fuel distribution port being disposed within the intake manifold system whereat it is subjected to the compression and expansion waves naturally induced in the charge adjacent to and upstream of the intake valve as a result of the closing of the intake valve at the completion of each charge intake event;

d. a carrier air duct in communication with said fuel distribution port, said carrier air duct communicating with said intake manifold system through a fluid restriction located upstream of said fuel distribution port location and downstream of said air throttle device; and

e. means enabling supply of the fuel portion of each charge for entrainment in said carrier air before the fuel is delivered through said fuel distribution port.

14. A method of forming a charge for each individual working chamber of a piston type, air breathing internal combustion engine, wherein each working chamber is provided with its own intake port and a periodically closing and opening intake valve for controlling intake of charge into the respective working chamber, and wherein it is desired to form a substantially fuel-free initial part of each charge between valve openings, comprising

a. supplying substantially all of the air portion of each charge to each working chamber through an individual intake manifold system in communication with each intake port;

b. supplying all the fuel portion of each charge through a fuel distribution port located in each intake manifold near to and facing toward the respective intake valve;

c. intaking a charge into and closing the respective intake valve rapidly to cause a momentum compression of the flowing charge adjacent the intake valve in the respective intake manifold system;

d. directing a portion of each charge disposed between the respective fuel distribution port and the respective intake valve upstream back into the respective fuel distribution port by using only the natural expansion wave induced in the respective charge portion by the rapid closing of the intake valve; and

e. making up the respective portion of the charge directed into the fuel distribution port with fuel-free air between intake valve openings.

4,343,280

FUEL DELIVERY CONTROL ARRANGEMENT

Douglas A. Luscomb, Mt. Upton, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 24, 1980, Ser. No. 190,127
Int. Cl.[3] F02M *57/02*
U.S. Cl. 123—459 14 Claims

1. A jerk pump assembly for an internal combustion engine of the type including at least one engine cylinder, at least one corresponding fuel injector nozzle associated with said at least one cylinder to direct the injection of fuel charges into said engine cylinder, said jerk pump assembly including:

a housing having a bore therein;

a plunger mounted for reciprocating movement in said bore;

an injection chamber defined by the space between said bore and said plunger;

means for periodically receiving and directing fuel into said injection chamber;

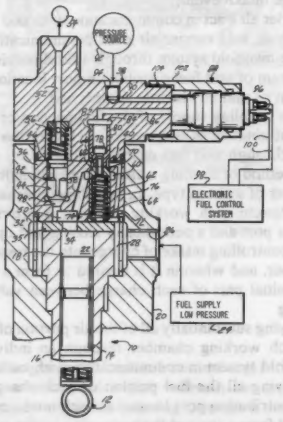
delivery valve means for periodically discharging fuel from

said injection chamber upon development of a predetermined pressure in said injection chamber;

means for controlling the pressure in said injection chamber to control the delivery valve means and the discharge of fuel from said injection chamber, said control means comprising:

means for establishing and disestablishing outflow from said injection chamber to control the opening and closing of said delivery valve means, said means including:

a bypass valve having a valve member and a valve seat, each having corresponding mating surfaces, said valve member being movable between an open position and a closed position against said valve seat mating surface to stop and start the outflow of fuel from said injection chamber in correspondence with said open and closed positions of said bypass valve member; and



operating means acting on said bypass valve means to alternately position said valve member in said open and closed position, said operating means including operator piston means moving together with said valve member and extending from said mating surface of said valve member and configured to establish a hydraulic balance of said pressure in said injection chamber acting on said valve member;

pilot valve means for controllably applying a fluid pressure on said operator piston means creating a force tending to cause said movement of said valve member, and means acting on said valve member opposing said fluid pressure force to thereby enable said movement of said valve member between said open and closed positions;

whereby establishing or disestablishing outflow from the injection chamber and the discharge of fuel from the injection chamber into an engine cylinder.

4,343,281

FUEL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Yasuzi Uozumi, Tokyo; Makoto Hashiguchi, Ohi, and Fumiaki Kikuchi, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

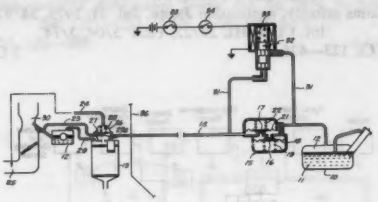
Filed Apr. 11, 1980, Ser. No. 139,356

Claims priority, application Japan, Apr. 19, 1979, 54-51428[U]

Int. Cl.³ F02M *33/02*

U.S. Cl. 123—519 **2 Claims**

1. In a fuel system for an internal combustion engine, the system including a fuel tank, a canister and means connecting the canister to the intake passage of the engine, the improvement comprising, in combination: a conduit connecting the fuel tank to the canister, valve means in said conduit normally preventing flow therethrough, said valve means opening to permit flow through said conduit when vapor pressure in the fuel tank exceeds a predetermined limit or falls below a predetermined limit, a bypass line connected to said conduit and bypassing said valve means, means including a first electric



switch closing when the engine is running, means including a second electric switch closing when an engine operating condition exists, and an electrically-operated valve device in said bypass line adapted to open in response to closing of both of said switches.

4,343,282

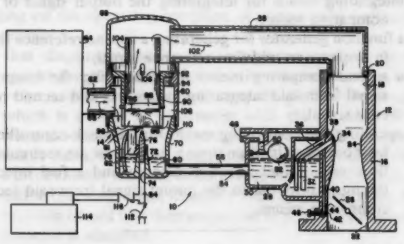
LIQUID TOWER CARBURETOR

Joseph G. Glenn, Rte. 1, Box 1221, Broken Arrow, Okla. 74012

Filed Jul. 16, 1979, Ser. No. 57,641

Int. Cl.³ F02M *17/18*

U.S. Cl. 123—523 **11 Claims**



1. A liquid tower carburetor for an internal combustion engine and comprising a nebulizer section, a carburetor having a fuel reservoir for receiving a fuel therein and being in communication with one portion of the nebulizer sections and a carburetor barrel in communication with another portion of the nebulizer section whereby the fuel is drawn from the carburetor fuel reservoir into the nebulizer section, nozzle means provided in the nebulizer section for discharging a high pressure air stream thereto for pulling the fuel into the nebulizer section, passageway means introducing a second high pressure air stream into the nebulizer section for atomization of the fuel and directing the atomized fuel through the carburetor barrel and into the carburetor for delivery from the carburetor in the usual manner.

4,343,283

DIESEL ENGINE FUEL PREHEATING SYSTEM

Clarence R. Shepherd, 3008 S. Mebane St., Burlington, N.C. 27215

Continuation-in-part of Ser. No. 97,329, Nov. 26, 1979. This application Oct. 20, 1980, Ser. No. 198,772

Int. Cl.³ F02N *31/00*

U.S. Cl. 123—557 **2 Claims**

1. A fuel preheat system for use with a diesel engine equipped with a fuel injection system and a thermostatically-controlled engine cooling system for circulating an engine

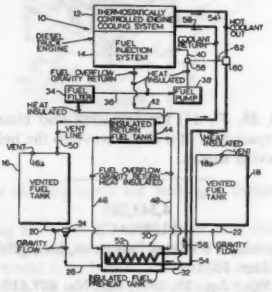
coolant and fed with diesel fuel supplied by a fuel pump from main fuel tanks positioned near said engine, comprising:

(a) a heat insulated fuel preheat tank, said fuel preheat tank being gravity fed from the engine's main fuel tanks and providing means for storing a portion of said fuel to be consumed by said engine;

(b) heat exchange means operatively associated with said fuel preheat tank and said cooling system of said engine enabling said portion of said fuel stored in said fuel preheat tank to be heated within a predetermined temperature range while contained therein;

(c) a heat insulated overflow fuel return tank adapted for receiving excess fuel supplied to said fuel injection system and for gravity feeding such excess fuel initially to said fuel preheat tank and in the event of need for gravity feeding any additional amounts to said main fuel tanks;

(d) a pump and piping system operatively associated with said fuel preheat tank, said overflow fuel return tank, and



the main fuel tanks associated with said engine, said pump and piping system enabling fuel to be continuously drawn from said main fuel tanks, pumped through and heated in said preheat fuel tank to a temperature within said predetermined temperature range, then to be admitted in a preheated condition to said fuel injection system in said engine whereby to decrease the fuel consumption requirements of said engine for a given load and load condition placed thereon as compared to the fuel consumption requirements of said engine for the same load and load condition utilizing the same said fuel at ambient temperature, return and excess preheated fuel to said overflow fuel return tank and then transfer said fuel from said overflow fuel return tank to said fuel preheat tank for recycling; and

(e) auxiliary temperature control means for controlling the flow of hot engine coolant from the engine cooling system to said heat exchange means whereby to establish said predetermined temperature range.

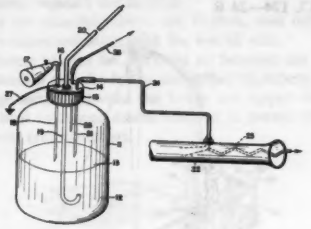
4,343,284

ANTI-POLLUTION SYSTEM FOR INTERNAL COMBUSTION AND DIESEL ENGINES

Nicolas Martinez-Delgado, P.O. Box 37-451, Mexico City, Mexico

Filed Mar. 10, 1980, Ser. No. 128,824
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—568 **4 Claims**

1. An anti-pollution system for an internal combustion engine having an ignition system, a fuel intake system providing a source of vacuum, and an exhaust gas system; characterized by a container within which is a body of water, a cap structure on said container, an air injection system including first tube means extending through the cap structure into the container, second tube means constructed and arranged to extract combustion gases from said exhaust system and introduce said gases through said cap structure into said container, third tube means extending from within the container through said cap structure to said intake system to subject the interior of the container to vacuum, and means energized from the vehicle ignition system



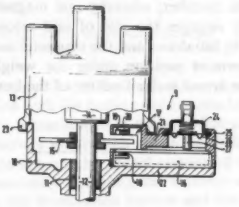
for heating said body of water, whereby during engine operation combustion gases are introduced into the container where they are cleansed, enriched with air and passed into said fuel intake system.

4,343,285

CONTACTLESS IGNITION SYSTEM OF UNITARY CONSTRUCTION

Hartmut Brammer, Vaihingen, and Heinz Leiber, Leimen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 30, 1980, Ser. No. 173,734
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1979, 2935412
Int. Cl.³ F02P *5/04, 1/00*
U.S. Cl. 123—647 **5 Claims**



1. For combination with an internal combustion engine,

a unitary contactless controlled ignition system comprising

a distributor housing (10,13);

a distributor shaft (12);

a Hall generator (17) including a magnetic circuit having a gap and a segmental rotor (15) moving through said gap, located in the housing;

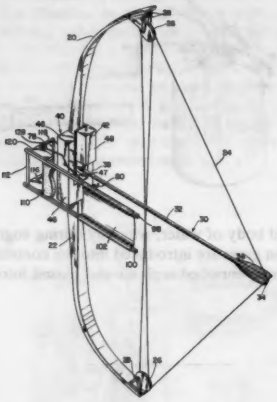
and a circuit-holding member holding circuit elements forming overvoltage protection circuits, amplifying and output stages,

a single building block incorporating said circuit-holding member and said magnetic gap of said Hall generator;

a pressure box (24) having a rod (27) moving along a predetermined path as a function of load on said internal combustion engine, and

said single building block being mounted on said distributor housing and said pressure box being integrated in said building block.

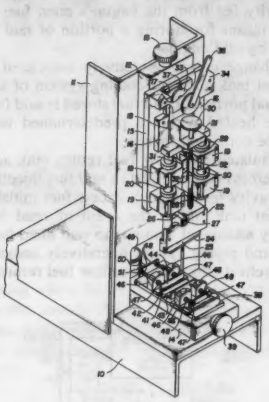
4,343,286
ARCHERY BOW
Bobby J. Thacker, 505 Dranesville Rd., Herndon, Va. 22070
Filed Apr. 6, 1979, Ser. No. 27,732
Int. Cl.[3] F41B 5/00
U.S. Cl. 124—24 R 20 Claims



1. In combination with an arrow including a shaft having a pile at one end of magnetic material and fletching at the other end of the shaft, an archery bow comprising:
(a) upper and lower limbs
(b) a bow string connecting the remote terminals of said upper and lower limbs, and
(c) an arrow rest for the arrow mounted on said upper limb of the bow
(d) said arrow rest including a stationary member
(e) a movable magnetic member supported by said stationary member and movable downwardly to a point centrally of the bow, and
(f) first means for limiting the downward movement of said magnetic member, whereby said magnetic member magnetically engages the pile of said arrow as the latter is moved to full draw, and the magnetic member is urged to its lowermost position under the weight of said arrow until the arrow is dead center of the bow.

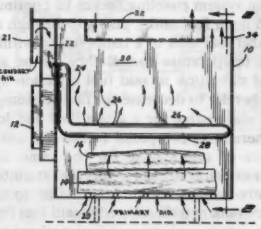
4,343,287
CRYSTAL CLEAVING MACHINE
Frederick C. Hallberg, Wheaton, Md., and John S. J. Benedicto, Falls Church, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Aug. 29, 1980, Ser. No. 182,879
Int. Cl.[3] B28D 1/32
U.S. Cl. 125—23 R 24 Claims

1. A crystal cleaving machine comprising:
means (38, 42, 43, 44, 53) for holding a crystal (40) to be cleaved;
means (23, 24) for cleaving the held crystal;
means (14) for selectively positioning the held crystal relative to said cleaving means;
biased means (18, 19, 20, 21) for imparting a shock wave to the held crystal by said cleaving means;
means (28, 29, 30) for selectively adjusting the level of bias upon said biased means;
means (12, 13, 15) for effecting contact of said cleaving means with a surface of the held crystal; and



means (33, 35, 37, 17) for actuating said biased means to effect impartation of a shock wave to the held crystal by said cleaving means.

4,343,288
FURNACE
David C. Tjosvold, c/o Wilson Industries, Inc., 2296 Wycliff St., St. Paul, Minn. 55114
Filed Jun. 17, 1977, Ser. No. 807,410
Int. Cl.[2] F23L 9/02
U.S. Cl. 126—112 1 Claim



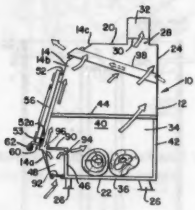
1. A furnace for the combustion of wood comprising:
a. combustion chamber means including four sidewalls, a top and a bottom;
b. grate means at the bottom of said combustion chamber means introducing primary air to said combustion chamber means;
c. secondary air inlet means contourly positioned adjacent a sidewall of said combustion chamber means;
d. preheat chamber means adjacent the top of said combustion chamber means and including a wall in common with an outer surface of an upper portion of said sidewall of said combustion chamber for preheating secondary air from said secondary air inlet means, and;
e. means in said combustion chamber means equally distributing said preheated secondary air to the top level of flames in said combustion chamber means, said preheat secondary distribution means including a U-shaped duct contoured closely adjacent all of said other sidewalls, positioned below said secondary air inlet means, and including a plurality of generally, inwardly directed holes, vertical tubes connected to and positioned above the ends of said U-shaped duct, and closely adjacent said sidewall,

means connecting said preheat chamber means to said vertical tubes, and the integrated area of said holes having an area equal to substantially twenty percent of the area of said primary air inlet means whereby the introduction of said preheated secondary air thereby increases the efficiency of combustion and ignition of unburned gases in said combustion chamber means.

4,343,289
WOOD BURNING STOVE

Valentine J. Zimmerman, 224 N. 4th St., Galesville, Wis. 54630

Filed Mar. 21, 1980, Ser. No. 132,625
Int. Cl.³ F24C 1/14; F24B 5/00, 7/00, 3/00
U.S. Cl. 126—77 **12 Claims**



1. A wood burning stove for heating a designated space comprising:

(a) a housing having top, bottom, front, rear and side walls, an access opening in said front wall for inserting therethrough wood to be burned and at least one door closing said opening for making said housing air tight;

(b) a combustion chamber within said housing for burning said wood, whereby combustion gases are produced in said combustion chamber and rise;

(c) an air chamber within said housing in air flow communication with said combustion chamber whereby air flowing from said air chamber is heated in said combustion chamber and rises, said air chamber defined by the intersection of said front wall, said bottom wall, a first interior wall extending generally upwardly from said bottom wall and a second interior wall extending generally rearwardly from said front wall below said at least one door;

(d) damper means formed in said bottom wall in said air chamber for controlling air flow into said air chamber;

(e) means associated with said air chamber for directing at least a portion of said air flow from said chamber across the surface of said door within said housing;

(f) flue means adjacent the top of said housing for discharging combustion gases and heated air therefrom; and

(g) conduit means having air inlet openings in at least one wall of said housing and air outlet openings in another wall of said housing, said outlet openings communicating with said space to be heated, said conduit means disposed within said housing in the path of said rising combustion gases and heated air, whereby said combustion gases and heated air give up at least a portion of their thermal energy to said air in said conduit means before being discharged through said flue means and said heated air in said conduit means is discharged through said outlet openings into said space to be heated.

4,343,290
HOT AIR FURNACE

James W. Flatte, 673 Bradford St. SW., Gainesville, Ga. 30501

Filed Feb. 26, 1981, Ser. No. 238,507
Int. Cl.³ F24H 3/02
U.S. Cl. 126—110 E **10 Claims**

1. A hot air furnace comprising:

an outer housing having a smoke exit, a hot air exit to a space to be heated and a fuel loading chute having a closure thereon;

a firebox having side walls, a rear wall and a front wall;

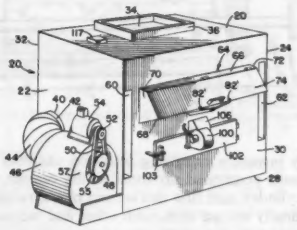
a pre-heating chamber between the outer housing and the firebox;

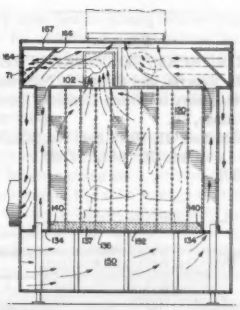
a lower chamber beneath the firebox;

an upper hot air chamber above the firebox, said hot air chamber in communication with the hot air exit;

an air distribution blower for directing air between the pre-heating chamber and the lower and upper chambers;

heat exchange means between the lower and upper chambers, said heat exchange means adapted to permit air to pass between said chambers;





a smoke chamber above the firebox, said smoke chamber in communication with the firebox and the smoke exit, and in heat exchange communication with the hot air chamber;

a combustion blower for feeding air to the firebox;

means within the space to be heated connected to the blowers for automatically operating the blowers whereby the fire is fed by the combustion blower and the space to be heated is supplied with hot air by the distribution blower which extracts pre-heated air from the pre-heating chamber and forces said air into the lower chamber and through the heat exchange means into the upper chamber where the hot air is further heated upon contact with the smoke chamber prior to exiting the hot air exit into the space to be heated; and

latching means to the loading chute closure.

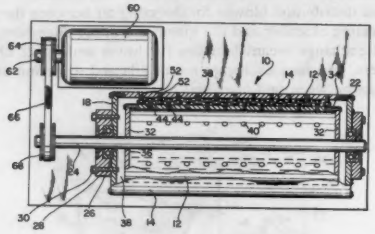
4,343,291
FRICTION HEAT GENERATOR

Robert L. Clausen, 1912 Pound Hill Rd., R.F.D. #1, Woonsocket, R.I. 02895

Filed Apr. 21, 1980, Ser. No. 142,108
Int. Cl.³ F24C 9/00
U.S. Cl. 126—247 **4 Claims**

1. A frictional heat generator comprising, an inner cylinder and a coaxial outer cylinder in surrounding spaced relation to the inner cylinder so as to provide a chamber therebetween

and wherein said chamber is adapted for receipt of a heat exchange fluid, said inner cylinder having a plurality of first pins affixed thereto having enlarged heads at their free ends and radially outwardly extending into said chamber with said enlarged heads positioned proximal to the inner surface of said outer cylinder, said outer cylinder having a plurality of second pins affixed thereto having enlarged heads at their free ends



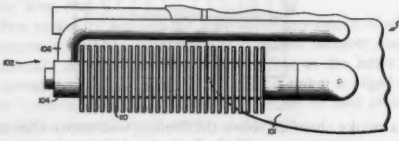
and radially inwardly extending into said chamber with said enlarged heads positioned proximal to the outside surface of said inner cylinder, said first and second pins arranged so as to be longitudinally spaced from each other and means for rotating said inner cylinder with respect to said outer cylinder whereby the movement of said first pins past said second pins and said outer cylinder churns and agitates said fluid so as to generate frictional heat in turn absorbed thereby.

4,343,292

VAPOR JACKETED COOKING VESSEL

Edward L. Kells, Batavia, and Robert L. Narowski, Park Ridge, both of Ill., assignors to Groen Division/Dover Corporation, Elk Grove Village, Ill.

Filed Feb. 21, 1980, Ser. No. 123,386
Int. Cl.³ A47J *27/06*
U.S. Cl. 126—378 **3 Claims**



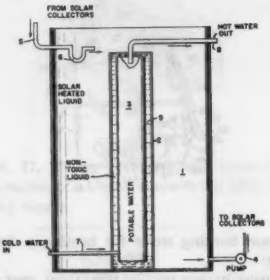
1. A vapor jacketed cooking vessel comprising a kettle having a bottom and side walls for receiving and containing therein a product to be heated; a vapor jacket disposed about all or a portion of the bottom and side walls of said kettle; and a working fluid contained within said vapor jacket; the improvement comprising a means for heating said kettle and a product contained therein, said means comprising at least one tubular evaporator having one closed end and one open end, said open end being affixed to said vapor jacket so that said working fluid flows into and floods said evaporator and functions as the working fluid therein, said working fluid in said vapor jacket functioning as a reservoir of working fluid for said evaporator to maintain sufficient working fluid in said evaporator to prevent burning said evaporator at high heat inputs, said vapor jacket and said tubular evaporator defining a space which is operationally sealed, essentially free of non-condensible gases and partially filled with said working fluid, means for heating said tubular evaporator to vaporize said working fluid flowing into it from said reservoir in said vapor jacket and a vapor conduit having one end thereof affixed in open communication to said tubular evaporator adjacent said closed end thereof and its other end affixed in open communication with said vapor jacket for conveying said vaporized working fluid from said evaporator into sid vapor jacket the entrance of said one end of said vapor conduit being above said evaporator and above the usual level of said working fluid in said vapor jacket, said working fluid upon being vaporized flowing to and condensing on that portion of said kettle surrounded by said vapor jacket, whereby said kettle and the product therein is heated by the thermal energy stored in the heat of evaporation of said fluid.

4,343,293

SOLAR DOMESTIC WATER HEATER

Harry E. Thomason, and Harry J. L. Thomason, Jr., both of 609 Cedar Ave., Fort Washington, Md. 20022

Filed Nov. 3, 1980, Ser. No. 203,427
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—400 **2 Claims**



1. Solar domestic water heater apparatus comprising a first outer container containing a heat-storage, heat-transfer liquid to be circulated to a solar heat collector, a second container inside of said first container containing a heat-storage, heat-transfer liquid, and a third container inside of said second container containing stored solar-produced heat in the form of relatively clean liquid such as water, said liquid in said first container not necessarily being potable and said liquid in said third container being potable, said third container and said second container extending downward to a point almost as low as the bottom of said first container and almost as high as the top of said first container.

4,343,294

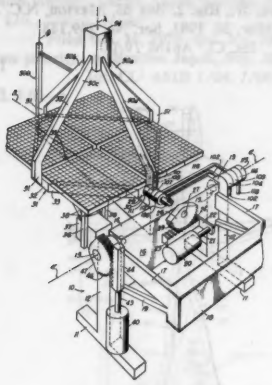
SOLAR COLLECTOR ASSEMBLY

Jack H. Daniel, 4009 Melinda Dr., Chattanooga, Tenn. 37416

Filed Oct. 26, 1979, Ser. No. 88,608
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **16 Claims**

1. In an apparatus for collecting solar energy of the type having a hot box against which the rays of the sun are reflected, the combination therewith of a plurality of flat mirrors spaced from and arranged around an axis extending between said mirrors and said hot box, said mirrors being in a plane generally perpendicular to said axis, a plurality of said mirrors being longitudinally adjacent to each other, a plurality of said mirrors being transversely adjacent to each other and a bed below said mirrors, said bed including means for individually supporting and permitting longitudinal and transverse adjustment of the position of each of said mirrors for assuring that said mirrors respectively individually reflect the rays of the sun toward said hot box, said means including a plurality of rods, a plurality of bolts passing through said rods and extending toward said hot box, swivel elements on the upper ends of said bolts for respectively supporting the lower central portion of each mirror for tiltably mounting the mirrors respectively on their bolts, said swivel elements each including a flat plate supporting each mirror, said plate being provided with a cen-

tral recessed portion and a hole through the recessed portion, and a pair of curved washers on opposite sides of said hole, said



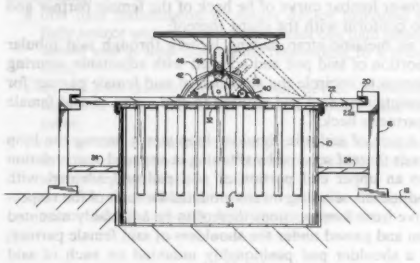
bolt extending through said hole and said washers and having a bolt head within said recessed portion.

4,343,295

SOLAR ENERGY SYSTEM

Robert Dubicki, 240 Cianci Rd., New Britain, Conn. 06053

Filed Mar. 5, 1981, Ser. No. 240,627
Int. Cl.³ F24J 3/02
U.S. Cl. 126—425 **2 Claims**



1. A solar energy system comprising means defining a fluid storage tank and including fluid inlet and outlet conduits communicating with the said tank,

a heat conductive top for said storage tank and including depending conductive elements connected to the underside of said top and adapted for immersion in the fluid filled tank,

fixed frame means supporting a ring gear for rotation on a vertical axis which is located within said heat conductive top,

a movable frame supported on said ring gear for rotation therewith and including a yoke structure pivotally supported on said ring gear for movement on a horizontal axis defined by said movable frame and said axis located in fixed relationship to said ring gear,

lens means for focusing solar energy, said lens means mounted on said yoke structure and adapted to focus solar energy at said heat conductive fluid storage tank top,

means for moving said yoke structure to permit said lens means to be aligned with the source of solar energy throughout the day, said yoke moving means including drive means mounted on said movable frame and said movable frame including parallel support tracks,

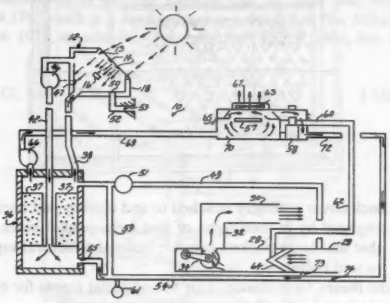
a follower journalled on a shaft which is driven by said drive means and which follower engages said track to support said movable yoke structure and the lens means mounted therein.

4,343,296

SOLAR HEATING SYSTEM

Antonino Franchina, Sterling Heights, Mich., assignor to Karl Wojcik, Warren, Mich., a part interest

Continuation-in-part of Ser. No. 84,880, Oct. 15, 1979, Pat. No. 4,291,833. This application Dec. 11, 1980, Ser. No. 215,380
Int. Cl.³ F24J 3/02
U.S. Cl. 126—436 **3 Claims**



1. A stationary solar heater having interior walls and a solar energy collector for utilizing sunlight to heat the walls and the solar energy collector whereby air is circulated past the walls and collector to absorb heat therefrom and translated to a device for utilizing the heat contained within the air, the improvement comprising:

a solar panel through which the sun rays pass for heating the interior walls of the solar heater and thus the air therein;

a plurality of lenses carried on a portion of the panel, said lenses concentrating the solar energy on the collector;

the collector having a length substantially longer than the length of the plurality of lenses;

wherein the plurality of lenses and the collector are aligned so that in the morning the entire amount of solar energy striking the lenses is concentrated directly on a first portion of said collector, at noon the entire amount of solar energy striking the lenses is concentrated directly on a second or central portion of the collector, and in the afternoon the entire amount of solar energy striking the lenses is concentrated directly on a third portion of the collector;

a heat chamber;

a plurality of Zeolite crystals in said chamber adapted to store heat communicated to said storage chamber from said solar energy collector;

means for communicating said solar energy collector to said heat storage chamber when the temperature in said solar energy collector reaches a predetermined amount; and

means for communicating moist air to said heat storage chamber to release the heat stored in said Zeolite crystals.

4,343,297

SOLAR ENERGY COLLECTOR

Irving E. Figge, 11209 Susan Dr., Sandy, Utah 84070

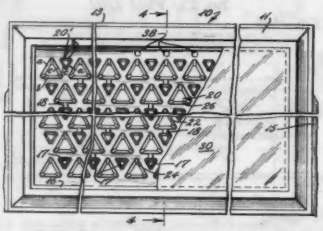
Continuation-in-part of Ser. No. 45,918, Aug. 17, 1979, abandoned. This application May 5, 1980, Ser. No. 146,434
Int. Cl.³ F24J 3/02
U.S. Cl. 126—449 **4 Claims**

1. A solar energy collector having a front, a back, and sides, and comprising:

a thin-walled energy collector panel comprising plural alternately interspersed small and large generally tetrahedron-

al-shaped collector pockets formed therein, an exposed surface facing said front and exposable to the sun and an unexposed surface facing said back, each of said pockets opening toward said exposed surface and having a truncated closed base, and a substantially perpendicular depth from said exposable surface to said base, the depth of said small pockets being less than the depth of said large pockets;

a glazing sealingly attached to and closing said front;



a back cover sealingly attached to and closing said back and engaged by at least some of said large pocket bases such that said large pockets provide internal structural support to said collector;

inlet means for entrance of air to and outlet means for exit of air from said collector; and

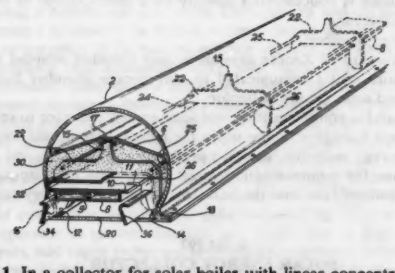
circulation means for circulation of air along a flow path from said inlet means to said outlet means.

4,343,298

COLLECTOR FOR SOLAR BOILER WITH LINEAR CONCENTRATION

Georges Ambille, Andernos; Eugene Bacconnet, Marcoussis, and Philippe Ragot, Suresnes, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 21, 1980, Ser. No. 151,912
Claims priority, application France, May 28, 1979, 79 13471
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—450 **4 Claims**



1. In a collector for solar boiler with linear concentration, comprising a pick-up tube through which a heat-transfer fluid passes and disposed in a supporting structure,

said supporting structure is constituted by a section in omega form, with a wide opening at its base, this section being provided with an inner reinforcement, and

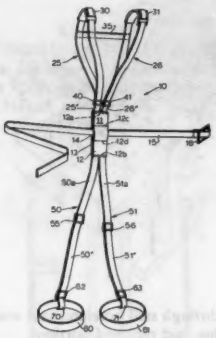
the pick-up tube is held by rigid crosspieces made of insulating material, distributed along the section and fixed to the base of the omega.

4,343,299

STABILIZING APPARATUS FOR MALE AND FEMALE PARTNERS

Luther C. Oxendine, Jr., Rte. 2, Box 63, Maxton, N.C. 28364

Filed Mar. 30, 1981, Ser. No. 249,148
Int. Cl.³ A61M *19/00*
U.S. Cl. 128—1 R **1 Claim**



1. A stabilizing apparatus for male and female partners comprising:

(a) an inelastic rectangular flexible back pad formed of mated stitched together pieces having a laterally extending tubular portion formed by lateral stitching intermediate the length thereof and adapted for placement in a central lengthwise of the body extending position in the lower lumbar curve of he back of the female partner and to conform with the shape thereof;

(b) an inelastic strap passing loosely through said tubular portion of said pad and adapted with adjustable securing means to encircle the abdomen of said female partner for maintaining said pad secured to said curve of said female partner's back;

(c) a pair of inelastic shoulder loop straps having the loop ends thereof secured by stitching in a spaced apart relation to an upper end portion of said pad and adapted with adjustable securing means mounted on each of the respective front loop portions thereof to be adjustably mounted on and passed under the shoulders of said female partner;

(d) a shoulder pad positionably mounted on each of said shoulder loop straps;

(e) an elastic cross strap secured by stitches to and extending between respective back loop portions of said shoulder loop straps and adapted in use to extend across the back of said female partner above the location of said pad and below the location of said shoulder pads; and

(f) a pair of strap assemblies for use by the said male partner, each said assembly comprising:

(i) an inelastic strap having one upper end integrally secured by stitching to the lower end edge of said pad and spaced apart from the other such assembly elastic strap and having an opposite lower end formed as a first strap loop means with means for adjusting the length of said first strap loop and to an extent at least sufficient to accommodate to the normal leg and foot positions of said male partner during coitus;

(ii) a closed elastic strap loop adapted as a stirrup for receiving one foot of said male partner; and

(iii) means for releasably locking the lower loop end of said first strap loop to retain said closed elastic strap loop positioned therein,

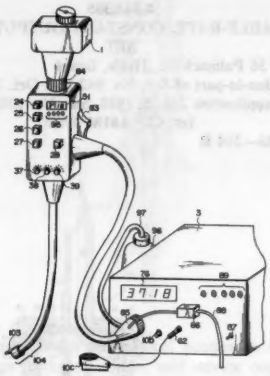
whereby during use each of said partners' positioning is stabilized by action of said apparatus and each leg of said male partner is forced to act against the resilient force of said elastic strap loops utilizing the same as elastic stirrups for the feet of said male partner.

4,343,300

DATA TRANSMISSION SYSTEM FOR AN ENDOSCOPE APPARATUS

Shinichiro Hattori, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 16, 1980, Ser. No. 187,538
Claims priority, application Japan, Sep. 20, 1979, 54-121225
Int. Cl.³ A61B *1/04, 1/06*
U.S. Cl. 128—6 10 Claims



1. A data transmission system for an endoscope apparatus which performs data-transmission between at least two of an endoscope, a photographic attachment and a light source unit, comprising:

a first data transmission/reception device provided in the light source unit and including at least one data generating means and at least one means responding to a reception data;

a second data transmission/reception device provided in at least one of the endoscope and the photographic attachment;

two-way data transmission lines provided in the endoscope to relay data between the first and second data transmission/reception devices; and

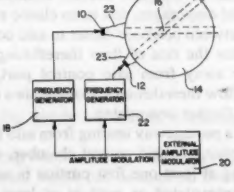
means for connecting the data transmission/reception devices and the two-way data transmission lines.

4,343,301

SUBCUTANEOUS NEURAL STIMULATION OR LOCAL TISSUE DESTRUCTION

Robert Indech, 46 Roger Williams Green, Providence, R.I. 02904

Filed Oct. 4, 1979, Ser. No. 81,884
Int. Cl.³ A61H *23/00, 39/00*
U.S. Cl. 128—24 A 7 Claims



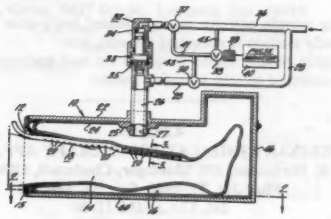
1. A method of noninvasively stimulating a neuron within a body via a mechanical resonance produced by a low frequency sonic beat comprising the steps of positioning a pair of transducers on the body so that the sonic waves emanating therefrom will intersect, sending a high frequency sonic wave from one transducer, sending a high frequency sonic wave from the other transducer, one of said sonic waves having a slightly higher frequency than the other, whereby a low frequency beat is produced at the intersection of said waves equal to the difference in frequency between said waves, whereby said low frequency beat is sufficient in amplitude to produce an action potential at a neuron situated at said intersection point, and directing said intersection to a predetermined point within the body.

4,343,302

PROMOTING CIRCULATION OF BLOOD

Richard S. Dillon, 150 Mill Creek Rd., Ardmore, Pa. 19003

Continuation of Ser. No. 955,620, Oct. 30, 1978, Pat. No. 4,269,175, which is a continuation-in-part of Ser. No. 803,656, Jun. 6, 1977, abandoned. This application Feb. 9, 1981, Ser. No. 233,073
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—24 R 1 Claim



1. Apparatus for improving circulation of blood through a leg which comprises: a rigid enclosure for a leg; a conduit communicating with an aperture in the upper wall of said enclosure and extending upwardly from said enclosure, said conduit having an outlet valve in an upper portion thereof, said outlet valve comprising a valve element normally biased upwardly to the open position to permit gas to flow through a circumferential area between the valve member and the valve seat; a compressed gas supply conduit communicating with the first-named conduit in a lower portion thereof; a normally closed inlet valve in said conduit; a source of compressed gas to said supply conduit and to said inlet valve and said outlet valve; means biasing said outlet valve to the open position; means responsive to heart action for supplying compressed gas from said source to said inlet valve to open said valve, and to said outlet valve to force said valve to the closed position in opposition to said biasing means, and for alternately interrupting said supply, thereby to close said inlet valve and to return said outlet valve to the open position.

4,343,303

STIMULATING APPARATUS

L. Benton Williams, P.O. Box 916, Georgetown, S.C. 29440

Filed Oct. 21, 1980, Ser. No. 199,343
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—32 8 Claims

1. Apparatus for stimulating muscle activity in a selected body area, comprising:

a body portion formed of a flexible and resilient, substantially hard plastic material having an inner layer of a soft, porous material and having a shape generally corresponding to the selected body area, said body portion being constructed to extend only partially around the selected body area to an extent sufficient to be self-supporting thereon and to allow freedom of movement of the selected body area when said body portion is mounted thereon, the hardness of the plastic material being varied in said body portion to facilitate movement of the body area on which

it is mounted and the self-supporting of the body portion thereon,

vibrating means mounted on said body portion for stimulating muscle activity in the selected body area when said body portion is mounted thereon, and

portable power means mounted on said body portion and connected to said vibrating means.

4,343,304

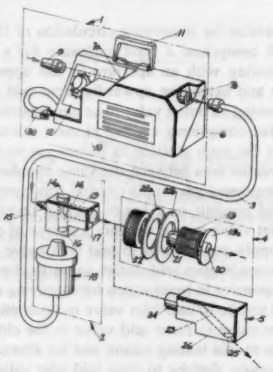
VETERINARY INHALATION THERAPY APPARATUS

Horst R. Hickmann, 455 Montegor, Cincinnati, Ohio 45230

Filed Jul. 17, 1980, Ser. No. 169,740

Int. Cl.³ A61M *11/00*

U.S. Cl. 128—200.14 **6 Claims**



1. A veterinary inhalation therapy apparatus by which liquid medication is reduced to a fine spray for the treatment of upper respiratory conditions in a small animal confined in a cage of the type having bars in a vertical plane with a spaced parallel relationship, said apparatus comprising:

(a) a portable electrically powered air compressor unit for producing a pressurized air output;

(b) a flexible conduit having inlet and outlet ends, the inlet end being connected to and receiving the output of said compressor unit;

(c) a nebulizing assembly having an inlet connected to the outlet end of said flexible conduit and an outlet, said nebulizing assembly including a reservoir for the liquid medication used in said inhalation therapy and means for reducing the medication in said reservoir to a fine spray by the interaction with the pressurized air flow from said compressor; and

(d) means for delivering said spray from said outlet of said nebulizing assembly to said cage, said means comprising:

(1) a straight, tubular fitting having an inlet end connected to said outlet of said nebulizing assembly and an outlet end of enlarged diameter adapted to be located within said cage, said fitting being externally threaded from said inlet end to said outlet end; and

(2) a nut threadedly engaged on said fitting whereby said fitting can be located between an adjacent pair of said bars with said last mentioned bars being clamped between said nut and said enlarged outlet end of said fitting.

4,343,305

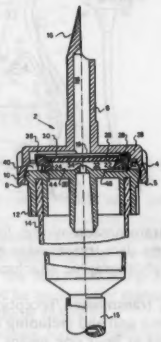
ADJUSTABLE-RATE, CONSTANT OUTPUT INFUSION SET

Dan Bron, 36 Palmach St., Haifa, Israel

Continuation-in-part of Ser. No. 842,168, Oct. 14, 1977. This application Jun. 5, 1980, Ser. No. 156,781

Int. Cl.³ A61M *5/00*

U.S. Cl. 128—214 R **20 Claims**



1. An adjustable-rate, constant-output infusion set comprising:

an inverted-cup-shaped connector piece having substantially cylindrical walls and a downward-facing, bottom surface provided with an inlet port,

a head piece rotatably engaging said connector piece;

a member comprised at least by an annular portion, interposed between and rotatable relative to either of, said connector piece and said head piece, and having means rendering it stationary relative to the other one of said pieces;

an elastically stretchable diaphragm at least the radial position of which is maintained by said member and which diaphragm defines with its upper surface a first chamber comprising said inlet port, and with its lower surface a second chamber comprising a control port, wherein, upon being exposed to a liquid pressure differential between said first chamber and said second chamber, at least a portion of said diaphragm, due to its elastic stretchability, is movable between positions closer to said control port to thereby reduce the rate of flow therethrough, and positions further away from said control port, to thereby increase the flow therethrough, to maintain a constant rate of flow, and further comprising

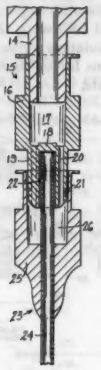
means defining a passageway leading from said first chamber via said member into said second chamber, said passageway including at least one first portion in which flow is relatively unobstructed as well as at least one second portion in which flow is relatively restricted, the restrictive effect of which second portion determines said differential pressure and, thus, the flow rate of said infusion set, wherein said restrictive effect can be varied by means of a rotary displacement of one of said pieces relative to the other.

4,343,306

CLEANING DEVICE FOR SYRINGE TYPE NEEDLES

Gerald E. Mericle, 130 Second St., Hamden, Conn. 06514

Filed Feb. 23, 1981, Ser. No. 236,834
Int. Cl.³ A61M 5/00
U.S. Cl. 128—218 N 5 Claims



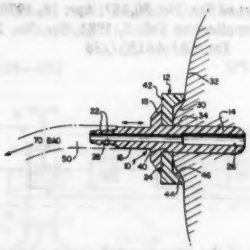
1. A cleaning device for surgical needles in combination with a syringe having a nozzle, said device comprising an adapter adapted for operative engagement with the syringe nozzle, the adapter including an axially extending portion having a substantially cylindrical outer wall, an axially extending passage in said portion and at least one radially disposed vent extending from said passage through said wall, the adapter being provided further with a proximally open chamber adapted to receive a syringe nozzle, a distally open chamber and a transverse wall between said chambers.

4,343,307

FLUSHING NOZZLE AND DILATER FOR COLOSTOMY IRRIGATION

Emil T. Reda, 5808 Waycross Rd., Baltimore, Md. 21206

Filed Dec. 16, 1980, Ser. No. 216,978
Int. Cl.³ A61M 3/00
U.S. Cl. 128—239 4 Claims



1. A flushing nozzle and seal for colostomy irrigation, comprising:

(a) a flushing nozzle having a flushing section at the leading end thereof which can be inserted through a stoma opening, a metering section, and a sealing flange integrally formed with said nozzle and positioned intermediate said flushing and metering sections, the outer end of said metering section being adapted to receive a connecting hose to an irrigation source, said flushing section having a flushing orifice and said metering section having a metering orifice, said orifices being coaxial and longitudinally spaced, with said flushing orifice being of relatively larger diameter so as to improve the flushing action, and

(b) a stoma seal adapted to fit over said flushing section and having an opening such that said flushing section fits relatively tightly within said opening but permits said stoma seal to be moved longitudinally along the peripheral surface of said flushing section, said stoma seal being generally cup-shaped and including a leading peripheral edge adapted to contact the abdominal wall around the stoma, and a rear surface against which the leading end of said sealing flange can selectively engage,

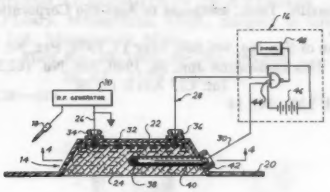
whereby sealing is provided at least at the peripheral edge of said stoma seal and the interface of said flushing section and the opening in said stoma seal.

4,343,308

SURGICAL GROUND DETECTOR

Robert D. Gross, 5427 6th St., Lubbock, Tex. 79416

Filed Jun. 9, 1980, Ser. No. 157,403
Int. Cl.³ A61B 17/39
U.S. Cl. 128—303.13 9 Claims



1. The method of preventing burns at a grounding pad during use in an electrosurgical procedure comprising:

a. monitoring the temperature at the grounding pad during the procedure, and

b. activating an alarm when the monitored temperature of the grounding pad exceeds a predetermined limit.

6. An electrosurgical device to determine the occurrence of a burn producing condition having

a. a signal generator,

b. an active electrode connected to said generator,

c. a system ground on said generator, and

d. a grounding pad with

(i) a conductive medium of a gel that is adapted to contact the patient,

(ii) said medium connected to said ground, and

(iii) an outer perimeter having an adhesive surface that is adapted to contact the patient;

wherein the improvement comprises:

e. a temperature sensor in said medium,

f. an alarm connected to said temperature sensor for sounding an alarm when the temperature exceeds a predetermined temperature.

4,343,309

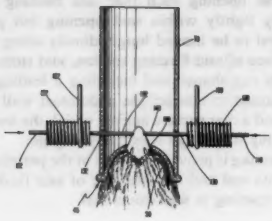
METHOD FOR REMOVING APPENDAGES FROM AVIAN SPECIES

Ronald A. DuBose, Marietta, Ga., and William D. Woolsey, Greenville, Tenn., assignors to Agri-Bio Corporation, Ithaca, N.Y.

Division of Ser. No. 906,808, May 17, 1978, Pat. No. 4,237,891.
This application Jun. 24, 1980, Ser. No. 162,553
Int. Cl.³ A61B 17/36
U.S. Cl. 128—303.14 8 Claims

1. A method for removing an undesired portion of an appendage having opposing sides from avian species which com-

prises making electrical contact with each of said opposing sides and burning a hole through said appendage by passing an

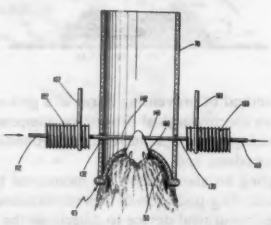


electric current between said electrical contacts such that the undesired portion will later be rejected.

4,343,310
APPARATUS FOR REMOVING APPENDAGES FROM AVIAN SPECIES

Ronald A. DuBose, Marietta, Ga., and William D. Woolsey, Greenville, Tenn., assignors to Agri-Bio Corporation, Ithaca, N.Y.

Division of Ser. No. 906,808, May 17, 1978, Pat. No. 4,237,891. This application Jun. 24, 1980, Ser. No. 162,554
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—303.14 **2 Claims**



1. An apparatus for removing an undesired portion of a beak from a fowl comprising:

mask means for receiving and positioning the beak of the fowl, the mask means having a recess element through which a portion of the beak extends with the beak received by the mask means; and

means for communicating with the portion of the beak extending through said recess element and for applying energy directly through the interior of said portion of the beak and selectively damaging a portion of said interior extending from one surface to an opposing surface of the beak by heating in said interior, the energy applied through said portion of the beak being of sufficient magnitude to damage said interior portion of the beak by burning without effecting the immediate removal of the undesired portion.

4,343,311
ATRIAL REFRACTORY CONTROL FOR R-WAVE REJECTION IN PACEMAKERS

H. Toby Markowitz, Anoka, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 30, 1980, Ser. No. 145,052
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **8 Claims**

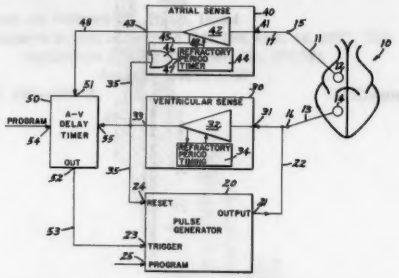
1. A pacemaker for selectively delivering stimulating pulses to the heart in an atrial synchronous mode of operation, comprising:

ventricular terminal means for connection to a patient's heart for delivering ventricular stimulation pulses thereto;

generating means for selectively delivering ventricular electrical stimulation pulses to said ventricular terminal means;

ventricular sense amplifier means connected to said ventricular terminal means for sensing ventricular beats of the heart, said ventricular sense amplifier means having a refractory period following the sensing of a ventricular heartbeat or stimulation pulse;

atrial terminal means for connection to a patient's heart for sensing atrial beats;



atrial sense amplifier means connected to said atrial terminal means for sensing atrial contractions of the heart;

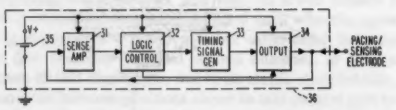
delay means operatively connected to said atrial sense amplifier means and said generating means for causing generation of a ventricular electrical stimulating pulse after a predetermined time interval following a sensed atrial contraction; and

control means operatively connected to render said atrial sense amplifier means inoperative during the refractory period of said ventricular sensing amplifier.

4,343,312
PACEMAKER OUTPUT CIRCUIT

Guillaume L. M. Cals, Dieren; Frederik H. M. Wittkampf; Kornelis A. Mensink, both of Brummen, and Hendrik L. Brouwer, Dieren, all of Netherlands, assignors to Vitafin N.V., Curacao, Netherlands Antilles

Continuation-in-part of Ser. No. 30,457, Apr. 16, 1979, Pat. No. 4,305,396. This application Feb. 5, 1981, Ser. No. 231,889
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **6 Claims**



1. A pacemaker of the type for delivering pacing stimulus signals to a patient's heart, having an output circuit for generating said pacing stimulus signals, a timing generator for timing the generation of said pacing stimulus signals, sensing means for sensing heartbeat signals from said patient's heart, and logic means connected to said sensing means and said timing generator for controlling generation of said pacing stimulus signals,

wherein said output circuit is characterized by a coupling circuit having an output capacitor, for coupling said stimulus signals to said patient's heart;

a charging circuit connected to said coupling circuit and having switchable circuit means for providing a first charging current to charge said output capacitor during a first predetermined time duration;

a first switching circuit connected to said coupling circuit and having means for providing discharge of said output capacitor for a second time duration, thereby providing a negative stimulus pulse to said heart; and

a second switching circuit with a capacitance element, connected to said coupling circuit, and having means for providing a second charging current to said output capacitor circuit during a third time duration.

4,343,313

ADHESIVE BRASSIERE AND ITS METHOD OF MANUFACTURE

Danielle Le Jeune, Rue du Vignoble, 44450 St Julien de Concelles, France

PCT No. PCT/FR79/00055, § 371 Date Feb. 29, 1980, § 102(e) Date Feb. 29, 1980, PCT Pub. No. WO80/00121, PCT Pub. Date Feb. 7, 1980

PCT Filed Jun. 29, 1979, Ser. No. 192,385

Claims priority, application France, Jun. 30, 1978, 78 19579

Int. Cl.³ A41C *3/00*

U.S. Cl. 128—505 **12 Claims**

1. A brassiere element for supporting a single breast, comprising: a thin, shaped sheet material, said element being adhesively attached at a lower end thereof to at least the outer side surface of the breast for supporting the same, said element including a strap-like portion extending upwardly from the breast toward a corresponding shoulder of the wearer and terminating proximate the shoulder, at least a portion of said strap-like portion being adhesively attached proximate said shoulder and constituting a shoulder strap.

4,343,314

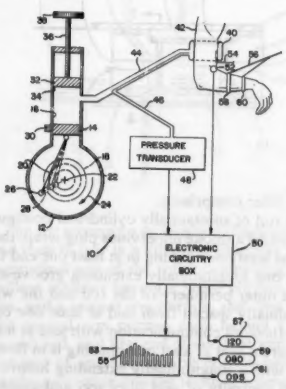
NON-INVASIVE REAL TIME BLOOD PRESSURE MEASUREMENT SYSTEM

Bohumir Sramek, 19211 Edgehill Dr., Irvine, Calif. 92715

Filed Aug. 11, 1980, Ser. No. 177,061

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—680 **17 Claims**



1. A non-invasive blood pressure measurement system for performing blood pressure measurements on a real time basis comprising:

a cuff composed of a flexible material for encircling a body appendage;

pump means for supplying fluid to said cuff, said pump means including means for periodically varying the pressure of said fluid at a frequency higher than the rate at which the heart beats and over a sufficient pressure range that the periodically varying fluid pressure repeatedly passes through both the systolic and diastolic blood pressure levels during each heartbeat interval in said appendage during blood pressure measurement acquisition;

means for detecting the times at which said fluid pressure is equal to said blood pressure;

means for measuring said fluid pressure; and

electrical circuit means for correlating said detecting means with said measuring means to thereby produce an electrical blood pressure signal indicative of the blood pressure in said appendage.

4,343,315

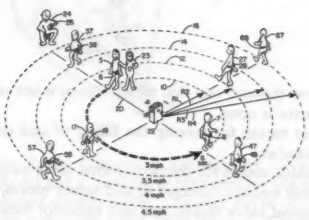
METHOD OF AND APPARATUS FOR MEASURING THE PHYSICAL CONDITION OF A PERSON

John B. O'Leary, Minnetonka, Minn., assignor to Grey-Mac Fitness, Ltd., Minneapolis, Minn.

Filed Jun. 20, 1980, Ser. No. 161,574

Int. Cl.³ A61B *5/02, 5/00*

U.S. Cl. 128—689 **11 Claims**



1. A method of simultaneously testing the physical condition of a plurality of persons, comprising the steps of:

providing a plurality of adjacent paths of progressively different lengths, the length of the longest path being at least twenty-five percent greater than the length of the shortest path,

having each person sequentially walk over each path in said plurality of paths in the same set period of time for each path, at a speed defined by requiring each walker to cover the length of each path in the same predetermined time interval, and after the set period of time, having each person move to an adjacent path of greater length, said persons moving progressively from the shortest path to paths of progressively increasing length such that the walking speed is progressively increased, and

continuously observing the heart rate of each person.

4,343,316

ELECTRONIC URINE FLOW MONITOR

Chris A. Jespersen, Fanwood, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 16, 1980, Ser. No. 150,250

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—771 **25 Claims**

1. An electronic urine flow monitor comprising,

a calibrated volume urine collection chamber having top and bottom portions in the shape of truncated cones, the narrow open ends thereof being at the top and bottom extremities of the container,

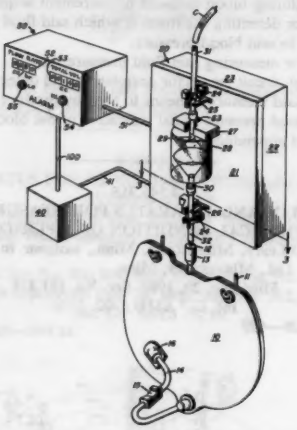
first tubing means connecting said top narrow end of the chamber to a patient and adapted to pass urine to said chamber,

a urine drainage reservoir,

second tubing means connecting said bottom narrow end of the chamber to said reservoir,

first remote control normally closed valve means normally acting to prevent flow through said second tubing means,

second remote control normally open valve means between said chamber and the patient and closable to block



flow through said first tubing means when said first valve means is open,

sensor means for sensing the filling of said double conical chamber,

indicator means for displaying total urine output, and

control means connected to said sensor means, said first and second valve means, and said indicator means for closing said second valve means and opening said first valve means to dump the contents of said chamber into said reservoir, and advancing said urine output display when said sensor means indicates the filling of said chamber.

4,343,317

METHOD OF TREATING GREEN TOBACCO

Gordon H. Bokelman, Boulder, Colo., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 9, 1980, Ser. No. 214,492

Int. Cl.³ A24B *3/00, 3/18*

U.S. Cl. 131—290 **6 Claims**

1. A method for treating whole green tobacco leaf comprising:

(a) expressing protoplasmic juice from the tobacco leaf by means of pressure; and

(b) artificially curing the tobacco leaf product resulting from step (a).

4,343,318

METHOD OF ENDOTHERMIC FERMENTATION OF TOBACCO

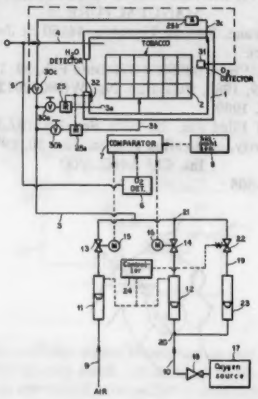
Wenzel Brenik, Grünwald, and Heinz Rudhard, Geretsried, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,805

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1979, 2927188

Int. Cl.³ A24B *3/18, 15/18, 15/20, 15/28*

U.S. Cl. 131—300 **4 Claims**



1. A method of fermenting tobacco, comprising the steps of:

storing tobacco in a closed chamber;

maintaining an atmosphere in said chamber which has a concentration of greater than 25% oxygen; and

fermenting the tobacco in said chamber endothermically in said atmosphere.

4,343,319

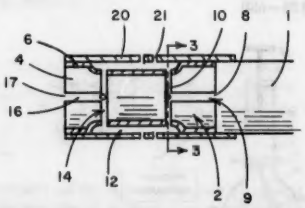
CIGARETTE FILTER

Daniel V. Cantrell, Prospect, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Nov. 28, 1980, Ser. No. 210,877

Int. Cl.³ A24B *3/04*

U.S. Cl. 131—336 **11 Claims**



1. A cigarette filter comprising:

a porous filter rod of substantially cylindrical configuration circumscribed by a smoke impervious plug wrap, the filter rod having at least one opening in at least one end thereof and at least one longitudinally extending groove embedded into the outer periphery of the rod and the wrapper and longitudinally spaced from said at least one opening and in flow-through communication with said at least one opening wherein said at least one opening is in flow communication with a longitudinally extending hollow channel disposed centrally of said filter rod and extending a distance less than the length of the filter rod, said longitu-

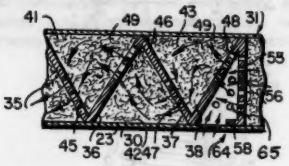
dinal channel interconnecting with groove connecting channels, said groove connecting channels being in flow communication with said groove, the groove being in flow communication with ventilating air.

4,343,320

CIGARETTE FILTER WITH OBLIQUE PARTITIONS

Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Filed Feb. 25, 1981, Ser. No. 238,118
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—339 **9 Claims**



1. A filter for cigarettes and the like comprising:
a hollow elongated tube having an axial bore;
a fan folded web of oval shaped cross partitions each extending in a plane oblique to the axis of said bore and forming a succession of sealed chambers along said bore;
said oval shaped, oblique cross partition having staggered perforations to alternately guide smoke through each chamber in an undulated path;
the chamber at the downstream end of said tube containing aromatic unburned tobacco to enrich the flavor of said smoke and
fibrous filter material in all other said chambers to absorb and filter out undesirable substances in said smoke.

4,343,321

HAIR CLIP

John C. Caranicas, Brookfield, Mass., assignor to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Jan. 30, 1981, Ser. No. 228,901
Int. Cl.³ A45D *8/24*
U.S. Cl. 132—48 A **7 Claims**

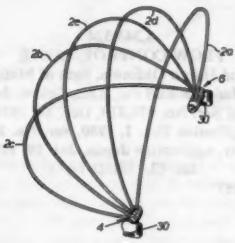
1. A clip for securing a generally cylindrical hair roller with a wound tress of hair in a direction generally perpendicular to the longitudinal axis of the roller comprising:
a resilient member having a hinge portion, a first arm portion, and a second arm portion, said first arm portion and said second arm portion each having a first end and a second end, said first end of said first arm portion and said first end of said second arm portion being connected to said hinge portion thereby forming a general U shape, said first arm portion including a curved portion defining a first arc segment, said second arm portion including a curved portion defining a second arc segment, the concave sides of said first and second arc segments facing one another, said first arc segment having a different centerpoint than said second arc segment, said second arm portion including a reinforced area between said hinge portion and said second arc segment for providing that said first arm portion flexes more than said second arm portion when the clip is being positioned over the generally cylindrical roller, wherein said hinge portion provides sufficient tension to said first arm portion and said second arm portion to releasably retain between said first and second arc segments a generally cylindrical hair roller having a range of outside diameters.

4,343,322

PORTABLE SUN SHELTER

Maurice K. Fiddler, 31 Hygeia Parade, Ringwood, Victoria, Australia

Filed Apr. 21, 1980, Ser. No. 142,392
Claims priority, application Australia, Apr. 23, 1979, PD8509
Int. Cl.³ E04F *10/04*
U.S. Cl. 135—5 R **3 Claims**



1. A foldable shelter comprising a framework having two joints, first, second and a plurality of intermediate ribs each of generally U-shaped configuration, a flexible cover connected to said ribs, one end of the cover being connected to the first rib and the other end of the cover being connected to the second rib, one of the free ends of each rib being connected at one of said joints and the other of the free ends of each rib being connected at the other of said joints, said joints permitting the ribs to be rotatable relative to one another, at least one of the joints including resilient means for resiliently restraining rotation of at least the first and second ribs relative to said joints, characterized in that the first and second ribs are mounted for rotation on a common shaft but are isolated from one another by an intermediate washer which is non-rotatably mounted on the shaft, thereby isolating rotational movement of the first and second ribs relative to said joints, so that said first and second ribs can be moved independently.

4,343,323

PIPELINE TRANSPORTATION OF HEAVY CRUDE OIL

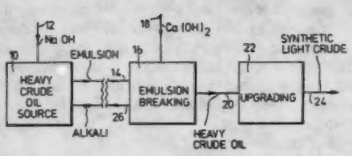
Michael A. Kessick, Edmonton, and C. Earl St. Denis, Fort Saskatchewan, both of Canada, assignors to Research Council of Alberta, Edmonton, Canada

Filed Jun. 9, 1980, Ser. No. 157,940
Claims priority, application United Kingdom, Jun. 8, 1979, 7920003
Int. Cl.³ F17D *1/17*
U.S. Cl. 137—13 **11 Claims**

1. A method of transporting a heavy crude oil having an API gravity of less than 25° and containing groups capable of forming surfactants from a first location connected by a pipeline to a second location, which comprises:
contacting said heavy crude oil at said first location with deaerated water containing at least sufficient strong base to provide a pH of the water of at least about 11 so as to

form an oil-in-water emulsion from the crude oil having a viscosity of less than 200 centistokes at 60° F.,

transporting said emulsion through said pipeline to said second location,



contacting said emulsion with slaked lime at said second location to invert said emulsion to form a water-in-oil emulsion, and

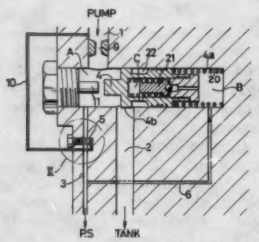
dewatering said water-in-oil emulsion to separate said oil from said emulsion.

4,343,324

FLOW CONTROL VALVE

Takeshi Ohe, and Haruo Okamoto, both of Matsuyama, Japan, assignors to Judosha Kiki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 970,310, Dec. 18, 1978, abandoned. This application Dec. 1, 1980, Ser. No. 211,594
Claims priority, application Japan, Jul. 19, 1977, 52-96014
Int. Cl.³ G05D *11/00*
U.S. Cl. 137—117 **8 Claims**



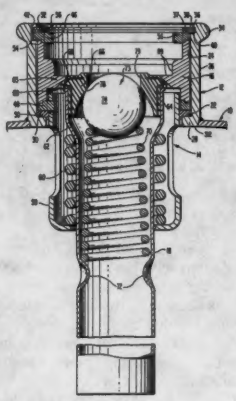
1. A valving system for a power assist hydraulic system comprising: means defining an external utilization hydraulic circuit having an intake section; a pump for supplying hydraulic fluid and an internal hydraulic circuit receiving said fluid; said internal circuit including sensor means to divert fluid from delivery to said external circuit to a recirculation passage when a predetermined level exists; said sensor means including first valve means responsive to the pressure at said pump outlet, an orifice disposed at an outlet passage of said pump, said first valve means being responsive to the pressure differential across said orifice, such that, upon said pressure differential exceeding a predetermined value, said first valve means operates to reduce fluid delivery to said external circuit to a predetermined minimum positive fluid delivery rate, and second valve means located upstream of, and responsive to, the pressure differential upstream and downstream of said first valve means, whereby when the fluid supply in said intake section reaches a predetermined level said second valve means diverts flow of hydraulic fluid from said intake to said recirculation passage while said first valve means allows at least said predetermined minimum positive fluid delivery rate, and wherein said orifice is arranged in the fluid flow downstream of said pump and upstream of said first and second valve means.

4,343,325

VALVE ASSEMBLY AND COUPLER THEREFOR

Merton R. Fallon, Thousand Oaks, Calif., assignor to Draft Systems, Inc., Northridge, Calif.

Continuation of Ser. No. 837,450, Sep. 28, 1977, Pat. No. 4,181,143. This application Sep. 10, 1979, Ser. No. 73,624
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ F16K *51/00*; F16L *37/00*; B65D *83/00*
U.S. Cl. 137—212 **48 Claims**



1. A valve sealing arrangement for sealing a container of fluid comprising:

(a) a valve assembly for providing access to said container;

(b) a valve assembly receiving member secured to said container;

(c) a deformable sealing member;

(d) said valve assembly having a body portion with a seal engaging surface; and

(e) said sealing arrangement including a non-threaded retaining member for insertion between said valve assembly and said receiving member for deforming and compressing said sealing member between said seal engaging surface of said valve assembly and said receiving member for effecting a seal between said valve assembly and said receiving member without a need for substantial rotational movement, said non-threaded retaining member being releasably secured within said receiving member at a predetermined position relative to said valve assembly for avoiding overcompression of said sealing member when said sealing member is in engagement with said seal engaging surface of the valve assembly.

4,343,326

APPARATUS FOR DISPENSING A LIQUID ADDITIVE

Iran P. Pelov, Montville, and Brian R. Penman, Rockaway, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 30, 1980, Ser. No. 154,610
Int. Cl.³ B67D *3/00*
U.S. Cl. 137—454 **3 Claims**

1. A portable self-contained liquid dispensing device for introducing a liquid additive to the surface of the ballast water in a cargo tank of a tanker vessel before and while the ballast water is being discharged from said cargo tank, said dispensing device comprising:

a container for holding a supply of said additive,

a container fitting threadably engaged to the top of said container,

a deck fitting including threads for threadable connection to the deck of said tanker vessel,

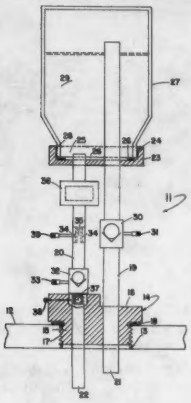
an additive flow line having a first end extending through said container fitting and a second end extending through and substantially beyond said deck fitting,

a first shut-off valve located in said flow line adjacent said deck fitting,

a flow control valve located in said flow line between said container fitting and said shut-off valve including adjustable orifice means for regulating the flow rate of additive during operation of said dispensing device,

a pressure equalization line having a first end extending through said container fitting and terminating substantially adjacent the bottom of said container and a second end extending through said deck fitting, and

a second shut-off valve located in said equalization line between said deck fitting and said container fitting, said



shut-off valves when in a closed position allowing said dispensing device to be inverted and threadably connected to a threaded aperture in the deck of said tanker vessel with the second end of the additive flow line and the second end of the pressure equalization line extending below the level of said deck without loss of liquid additive, said second shut-off valve when opened being effective to permit equalization of the vapor pressure in the cargo tank and the vapor pressure in the container, whereby when said first shut-off valve is opened liquid additive will flow by gravity from said container onto the surface of the ballast water at a greater initial rate and at a subsequent gradually decreasing rate as the height of the liquid additive in said container decreases for any given adjustment of said orifice means and air vent means mounted in said deck fitting for said flow line.

4,343,327

PRESSURE RESPONSIVE, MANUALLY OPENING VALVE

Robert R. Hallstein, Danning, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 11, 1980, Ser. No. 167,508
Int. Cl.³ F16K *17/00*
U.S. Cl. 137—464 **11 Claims**

1. A valve device for regulating the flow of fluids from a supply container to a utilizing means comprising:

first chamber means for directing the flow of fluids;

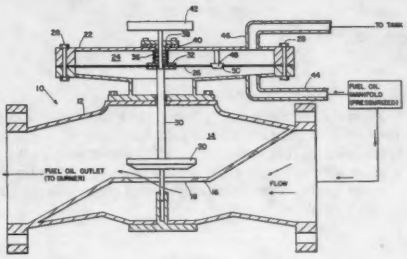
primary inlet means for delivering fluids into said chamber means;

primary outlet means for delivery fluids from said chambers means;

aperture means in said first chamber means for allowing the passage of fluids from said inlet means to said outlet means;

primary valve means for regulating the flow of fluids through said aperture means, said primary valve means substantially closing said aperture means when in its closed position;

control means for moving said primary valve means from an open to a closed position, said control means including reset means to manually reset said primary valve means to an open position, pressure-responsive means to maintain said primary valve means in said open position when the fluid pressure is greater than a predetermined amount and means forming a second chamber isolated from said first chamber means, said pressure-responsive means being located in said second chamber means, said second chamber means including a secondary inlet and a secondary outlet and means forming a secondary valve, said pressure-responsive means including a diaphragm



extending substantially across said second chamber, said diaphragm having port means therein in substantial alignment with said secondary valve means for allowing fluid to pass therethrough from said secondary inlet to said secondary outlet, said secondary valve means being located substantially centrally in said diaphragm between said primary valve means and the exterior of said second chamber and positioned so as to close said port means when said fluid pressure from said secondary inlet is above a predetermined pressure and to open said port means when said fluid pressure is below said predetermined pressure, thereby allowing fluid to flow from said secondary inlet to said secondary outlet through said port means, and thereby permitting said primary valve means to close, and when said primary valve means is manually set to an open position by said reset means said primary valve means is maintained in said open position by said pressure-responsive means provided said fluid pressure is at or above said predetermined pressure.

4,343,328

FLOW SENSING CHECK VALVE

Eugene E. Junger, New Berlin, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Sep. 26, 1980, Ser. No. 191,639
Int. Cl.³ F15B *13/042*
U.S. Cl. 137—491 **8 Claims**

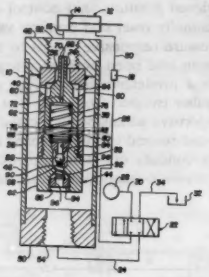
1. A flow sensing check valve comprising:

(a) an outer shell having a first port at one end thereof and a second port at the other end thereof;

(b) an inner sleeve mounted in said outer shell, said inner sleeve having a first port at one end thereof in fluid communication with the first port in said outer shell, a second port at the other end thereof in fluid communication with the second port in said outer shell, and a third port intermediate the other two ports in said inner sleeve, the third port in said inner sleeve being in fluid communication with the second port in said outer shell;

(c) a poppet valve slidably disposed in said inner sleeve, the outer periphery of said poppet valve being in sealing engagement with the inside of said inner sleeve between the second and third ports in said inner sleeve and having

a passageway therethrough serving as a pilot flow control orifice, said passageway having a first end in fluid communication with the first port in said outer shell and a second end in fluid communication with the interior of said inner sleeve between said poppet valve and the second port in said inner sleeve;



(d) first means urging said poppet valve into valving engagement with the first port in said inner sleeve; and

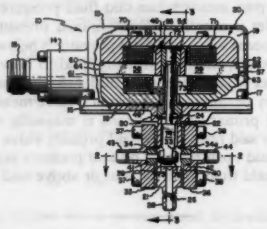
(e) a velocity fuse cooperating with the second port in said inner sleeve to close the second port in said inner sleeve upon sensing a pre-selected pressure in the first port in said outer shell.

4,343,329

BISTABLE FUEL VALVE

Clement J. Turansky, Tonawanda, and Gerard J. LeBlanc, North Tonawanda, both of N.Y., assignors to Textron Inc., Providence, R.I.

Filed Dec. 6, 1978, Ser. No. 966,888
Int. Cl.³ F16K *11/02, 31/08*
U.S. Cl. 137—625.44 **17 Claims**



1. A magnetically actuated bistable valve assembly comprising, in combination:

a valve body defining a fluid supply chamber and having a fluid inlet and a pair of fluid outlets, said fluid outlets presenting a pair of spaced valve seats;

a valve member projecting into said chamber between said valve seats and having a pair of valves respectively engageable with said valve seats;

flexure means mounting said valve member on said valve body for centering said valves each in spaced relation to its associated valve seat whereby both fluid outlets are open and for allowing opposite deformations thereof sufficient respectively to engage each valve with its seat;

an armature carried by said flexure means and having opposite free end portions;

permanent magnet means defining a pair of North-South air gaps respectively between which said free end portions of the armature are situated for latching said armature in either one of two positions corresponding to said opposite deformations of the flexure means, said permanent magnet means being poled such that said armature is subjected to relatively opposite flux fields longitudinally thereof in said respective two positions thereof; and

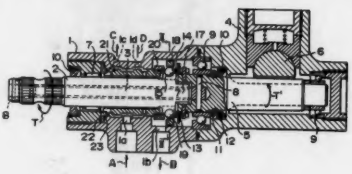
electromagnetic means for transiently opposing first one and then the other of said flux fields thereby to allow said armature to oscillate back and forth between opposite deformation conditions of said flexure means.

4,343,330

POWER STEERING DEVICE

Akio Numasawa, Nagoya; Ryouhei Kizu, Toyota; Mitsuru Naka, Toyota, and Nobuo Hiraiwa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Mar. 7, 1980, Ser. No. 128,037
Int. Cl.³ F15B *9/00*
U.S. Cl. 137—625.48 **6 Claims**



1. A power steering device transmitting torque of a steering wheel to wheels of an automotive vehicle utilizing fluid pressure comprising:

an input shaft coupled with said steering wheel, said input shaft having a first ball confining path means extending angularly along the shaft;

an output shaft coaxial with said input shaft;

a torsion bar connecting said input shaft with said output shaft;

a ball movable along said first ball path;

a valve spool for controlling the flow of said pressure fluid in response to movement in the axial direction, said valve spool coaxially located with said input shaft;

a ball holding means for holding said ball in said first ball path and axially movable with said ball, said ball holding means engaged at one end with said valve spool and including a first abutment member for axially retaining said ball in said first ball path, a second abutment member having a biasing means radially holding said ball under compression in said ball path, and a slot in the ball holding means for engaging a member coupled to said output shaft, said slot permitting axial movement of the ball holding means with respect to said output shaft and preventing rotational movement with respect to said output shaft, whereby when said input shaft is rotationally displaced from said output shaft, said ball holding means axially moves as said ball moves along said ball path as a result of said ball holding means being rotationally fixed and said valve spool moves axially.

4,343,331

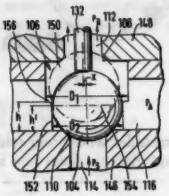
ELECTRO-HYDRAULIC ACTUATING DEVICE AND A FAST-SWITCHING MAGNETIC VALVE FOR USE THEREIN

Johannes Tersteegen, Brunswick, Fed. Rep. of Germany, assignor to Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt, Cologne, Fed. Rep. of Germany

Division of Ser. No. 43,782, May 30, 1979, Pat. No. 4,281,584. This application May 19, 1981, Ser. No. 265,414
Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900473
Int. Cl.³ F16K *11/02*
U.S. Cl. 137—625.65 **3 Claims**

1. A switching valve designed as a magnetically-coupled

bistable, 3/2-way valve, a spherical valve closure member, through which fluid from a source of supply is controllably directed and through which a return flow of said fluid is controllably directed, a plunger movable in the axial direction by means of a magnetic drive to move said valve closure member into alternative engagement with a first valve seat coordinated with the return flow and an opposite second valve seat coordinated with the supply, said valve having in the region of the



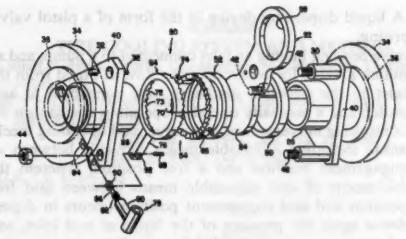
valve seat coordinated with the supply a first fixed lateral guidance means for the valve member extending from the valve seat to beyond the largest diameter of the valve member when in the closure position and in the region of the valve seat coordinated with the return flow, a second fixed lateral guidance means for guiding the valve member laterally with a clearance which is greater than a maximum positional error due to maintenance of said valve seats.

4,343,332

LINE BLIND

James W. Williams, 3rd, Lansdale, and John S. Fetterolf, Royersford, both of Pa., assignors to Fetterolf Corporation, Skippack, Pa.

Filed Aug. 27, 1979, Ser. No. 70,030
Int. Cl.³ F16L *55/10*
U.S. Cl. 138—94.3 **1 Claim**



1. A line blind comprising two tubular opposed body sections having a common longitudinal axis, two circular cross-sectioned tubular, longitudinally inner, end portions each forming part of a different one of these particular body sections, bolting means to rigidly clamp one body section to the other in a fixed position with a fixed gap between their inner end portions, a spectacle plate setup having a plate which includes a solid part and an apertured part and having one position in which the solid part will be interposed between the end portions and another position in which the the apertured part will be interposed between the end portions, as well as a position in which neither is in between, each of the end portions having an annular recess facing the end and a fixed surface in its bottom, which fixed surface in the bottom of the recess limits motion in its direction by anything in the recess, a sealing ring fixed in position in one recess abutting against the fixed surface in the bottom of that recess and projecting out of the top of that recess toward the other end portion but with a space between, there being in the other recess a separate unattached movable sealing ring toward the top of the recess and further into the recess two annular cams facing one another and each having a series of sloping cam surfaces on respective longitudinal annular ends cooperating with one another, one of the cams abutting on the fixed surface in the bottom of that recess, the other cam bearing on the sealing ring above it in the recess, the recess in which the cams and movable sealing ring are present forming and acting as an unobstructed tubular guide for the movable sealing ring all the way up to and including the very top opening of the recess, there being no obstruction short of the fixed sealing ring for movement of the movable sealing ring when the spectacle plate setup is in the position in which neither the solid part nor the apertured part is interposed between the end positions; means for selectively bringing the cams into contact at relatively lower places on the above-mentioned intercooperating sloping cam surfaces and at relatively higher places on the above-mentioned intercooperating sloping cam surfaces at will and thereby urging the cam nearer the top of the recess in the direction of the very top opening of the recess for a greater or lesser distance, the fixed gap between the ends of the end portions, the position of the top of the fixed seal, the thickness of the spectacle plate, and the travel of the cam elements being so interrelated that these features constitute means whereby

(a) when the spectacle plate has its solid or apertured part in a position where it is located between the ends of the end portions of the above body sections, the cam movement is enabled to bring the movable seal with pressure against the spectacle plate and the spectacle plate with pressure against the fixed seal, thereby sealing off the interior of the body sections, and whereby

(b) when neither the solid nor the apertured part of the spectacle plate is located between the ends of the end portions of the above body portions, the cam movement is enabled to bring the movable seal up into position for ready removal, and whereby

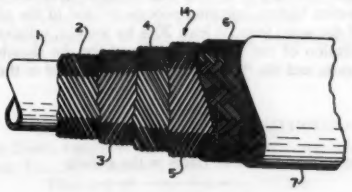
(c) any fluid which might happen to come out of the interior of either body section to a position outside of either seal despite the presence of the seal can go outside of the line blind setup as a whole and thus make its presence outside of the interior of the body section evident to someone interested in the effectiveness of the line blind setup.

4,343,333

FATIGUE RESISTANT HIGH PRESSURE HOSE

Bernard Keister, Aurora, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 27, 1979, Ser. No. 70,206
Int. Cl.³ F16L *11/12*
U.S. Cl. 138—125 **19 Claims**



1. An improved flexible reinforced hose adapted for use in the conveyance of fluids under pressure, said hose comprising a core tube having a laminated wall comprising an inner layer of extruded flexible nylon material and an outer layer of extruded flexible polyurethane material, a first layer of synthetic reinforcement fibers wound helically about the core tube with at least a portion thereof bonded to the core tube by embedment in the polyurethane material, a second layer of synthetic reinforcement fibers wound helically about the first layer, a third layer of synthetic reinforcement fibers wound helically about the second layer, a fourth layer of synthetic fibers wound

helically about the third layer, a braided layer of reinforcement fibers disposed about the fourth layer, and a protective sheath disposed about the braided layer, said second layer wound in a direction opposite to the winding direction of the first layer and said fourth layer wound in a direction opposite to the winding direction of the third layer, said synthetic fibers of the helically wound layers having a tenacity of from about 12 to about 25 grams per denier and an elongation at break of from about 2% to about 8%, and said fibers of the braided layer comprising a nylon or poly(ethylene-terephthalate)ester material; wherein the improvement comprises: said hose having improved resistance to flexing and pressure pulsation fatigue provided by the synthetic fibers of the first and second layers comprising a plurality of the same or different deniers of said fibers, the deniers of the fibers having a twist of 1.5 turns per inch or less, corded together with a twist of more than 2 and less than 20 turns per inch in a direction opposite to the direction of twist in each of the deniers and the synthetic fibers of the third and fourth layers comprising a plurality of the same or different deniers of said fiber having a twist of about 1.5 turns per inch or less.

4,343,334

JEANS FABRIC COMPRISING OPEN SHEATH CORE FRICTION SPUN YARNS AND PROCESS FOR ITS MANUFACTURE

Christian Schulze, Hattersheim am Main, and Hans-Joachim Plein, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 29, 1980, Ser. No. 201,798

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1980, 3036069

Int. Cl.³ B65H *71/00*; D02G *3/36*; D03D *15/00*

U.S. Cl. 139—420 R **8 Claims**

1. Jeans fabric which consists of at least 40% by weight of polyester fibers and at least 10% by weight of cotton and in which the filling yarn is a polyester yarn or a polyester fiber/-cotton mixed yarn and in which the warp has been dyed and the filling has not been dyed, wherein at least the warp consists of a sheath-core staple

fiber yarn manufactured by the open end sheath-core friction spinning process, in which yarn the polyester fibers are disposed predominantly in the core, while the cotton fibers are disposed predominantly in the sheath, of the warp yarn.

8. Process for the manufacture of a jeans fabric according to claim 1 by spinning polyester fibers and cotton to form a polyester-cotton mixed yarn for the warp and a polyester yarn or polyester-cotton mixed yarn for the filling, dyeing the warp yarn and weaving in a twill construction, wherein an open sheath-core friction spinning process is used in the manufacture of the warp yarn, at least 20% by weight, relative to the cross-section of the yarn, is employed for the sheath of the warp yarn, and the % by weight of cotton used in the sheath is

$$A \geq 0.0041\,(S-37)^2+90.5,$$

relative to the mixture of fibers in the sheath.

4,343,335

PROCESS AND APPARATUS FOR MANUFACTURING SOAP PADS

Hisao Kobayashi, Chiba, and Kazuo Fujita, Wakayama, both of Japan, assignors to Kao Soap Company, Ltd., Tokyo, Japan

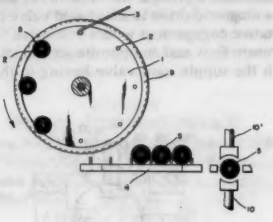
Filed Mar. 27, 1980, Ser. No. 134,689

Int. Cl.³ B21F *3/00*

U.S. Cl. 140—71 C **10 Claims**

1. A method for manufacturing a soap pad comprising the steps of: winding metallic wool into a roll form onto a spindle containing at least one hole therein;

applying a soap solution to said roll form through said hole of said spindle to cause said solution to adhere to said metallic wool;



separating said metallic wool from said spindle; and

press forming said metallic wool into a desired shape.

4,343,336

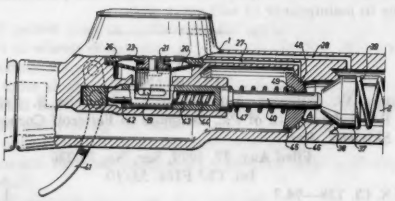
LIQUID DISPENSING DEVICE

Lars E. Trygg, Villa Solvik 310, S-770 13 Grangärde, Sweden

Continuation-in-part of Ser. No. 171,232, Sep. 24, 1979, Pat. No. 4,331,187. This application Nov. 6, 1979, Ser. No. 192,116

Int. Cl.³ B65B *57/14*

U.S. Cl. 141—218 **9 Claims**



1. A liquid dispensing device in the form of a pistol valve, comprising:

a valve housing having an inlet connected to a pump, and an outlet; a valve for controlling the flow of liquid from the inlet to the outlet; a discharge pipe connected to said outlet; and a manually operable operating mechanism for controlling movement of said valve, said operating mechanism including adjustable means movable between an engagement position and a free position, wherein the movement of said adjustable means between said free position and said engagement position occurs in dependence upon the pressure of the liquid at said inlet, and wherein means are provided for equalizing an overpressure at said inlet:

(a) when the pump is deactivated when the valve is open, or

(b) if an attempt is made to open the valve when the pump is deactivated and said pressure is sufficient to move said adjustable means;

said valve being arranged to open against the flow of fluid.

4,343,337

FUEL DISPENSING NOZZLE

James W. Healy, 54 Plymouth Rd., Wakefield, Mass. 01880

Filed Jul. 9, 1980, Ser. No. 167,347

Int. Cl.³ B65B *3/26, 57/14*

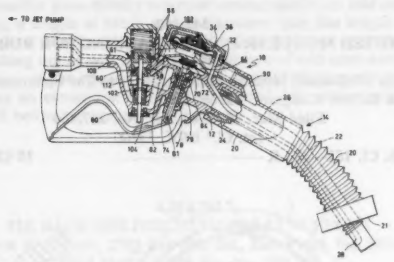
U.S. Cl. 141—226 **10 Claims**

1. In a fuel dispensing nozzle for filling a fuel tank, said nozzle having a spout, a fuel conduit leading to the spout, a vapor return line associated with the spout for withdrawing displaced vapors from the fuel tank being filled and transporting them to a remote vapor collection system, a fuel valve for controlling the flow of fuel through the conduit, an aspirator

line having its tip located with respect to said spout so as to be in communication with the interior of the tank being filled when said spout is inserted in the fill pipe, means for producing a negative pressure in said aspirator line and pressure sensitive means in communication with said aspirator line for closing said fuel valve when a predetermined negative pressure exists in said aspirator line, the improvement which comprises

an aspirator valve in said aspirator line located between said tip and said means for producing a negative pressure, and

pressure actuable means in communication with said aspirator line for controlling said aspirator valve,



said pressure sensitive means being in communication with said aspirator line between said aspirator valve and said means for producing a negative pressure,

said pressure actuable means being arranged to respond to both negative and positive pressures in said line and to close said aspirator valve when either of a predetermined negative or positive pressure is detected in the fuel tank being filled, thereby permitting the negative pressure in said aspirator line to reach said predetermined value at said pressure sensitive means so as to actuate said pressure sensitive means to close said fuel valve.

4,343,338

TIRE COOLING SYSTEM AND METHOD

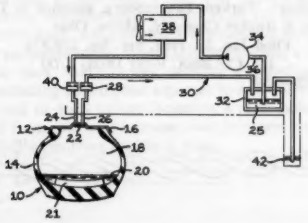
Cullen P. Hart, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00241, § 371 Date Feb. 25, 1981, § 102(e) Date Feb. 25, 1981

PCT Filed Feb. 25, 1981, Ser. No. 277,756

Int. Cl.³ B60C *19/06;* **F28F** *1/00*

U.S. Cl. 152—153 **26 Claims**



1. In a wheel assembly having a wheel **(12)** mounted on a vehicle, said wheel **(12)** having a rim **(16)**, a tire **(14)** mounted on said rim **(16)**, and a central cavity **(18)** defined by said tire **(14)** and rim **(16)**, the improvement comprising:

fluid circuit means **(22,28,30,40)** for pumping a liquid **(25)** between said central cavity **(18)** and a non-rotating heat exchanger **(38)**, said heat exchanger **(38)** being external to said wheel **(12)**.

4,343,339

PROCESS FOR THE PRODUCTION OF TIRES COMPRISING VULCANIZED ELASTOMERS CONTAINING URETHANE GROUPS

Jürgen Schwindt; Otto Ganster, and Hans-Joachim Meiners, all of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 69,452, Aug. 24, 1979, abandoned. This application Sep. 22, 1980, Ser. No. 189,496

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838756

Int. Cl.³ C08G *18/82, 18/62;* **B60C** *1/00*

U.S. Cl. 152—209 R **13 Claims**

1. A process for the production of vulcanized elastomers containing urethane groups by casting, comprising:

(A) mixing the following components:

(1) liquid diene polymers containing isocyanate reactive functional groups, having an average functionality of 2 to 3 and an average molecular weight of from 500 to 30,000,

(2) compounds having molecular weights of from 400 to 10,000, and containing at least two hydroxyl groups,

(3) polyisocyanates,

(4) 3 to 30% by weight, based on 100 parts by weight of components (1)+(2), cross-linking agents having molecular weights of from 32 to 400 and containing at least two active hydrogen atoms,

(5) vulcanization agents used for vulcanization and optionally

(6) reinforcing fillers; and subsequently

(B) pouring the mixture into a mold and allowing the mixture to react in the mold; and subsequently removing the molded product and

(C) vulcanizing outside the mold at temperatures above 120° C.

13. Tires and tire components such as tread surface strips and/or side parts as well as retreaded tires, comprising vulcanized elastomers containing urethane groups prepared by casting, comprising:

(A) mixing the following components:

(1) liquid diene polymers containing isocyanate reactive functional groups,

(2) compounds having molecular weights of from 400 to 10,000, and containing at least two hydroxyl groups,

(3) polyisocyanates,

(4) cross-linking agents having molecular weights of from 32 to 400 and containing at least two active hydrogen atoms,

(5) vulcanization agents used for vulcanization and optionally

(6) reinforcing fillers; and subsequently

(B) pouring the mixture into a mold and allowing the mixture to react in the mold; and subsequently

(C) vulcanizing the molded product at temperatures above 120° C.

4,343,340

SHUTTER SLAT CONFIGURATION

Helmut Paule, Palgrave, Canada, assignor to Prime Marketing Group, Inc., St. Petersburg, Fla.

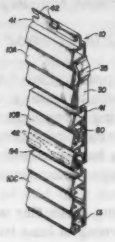
Filed Jul. 28, 1980, Ser. No. 172,548

Int. Cl.³ E06B *9/14*

U.S. Cl. 160—232 **5 Claims**

1. A slat configuration for a shutter assembly comprising in combination, an extruded hollow body generally rectangular in cross section having two interlock members extending from opposite end surfaces to form mating tongue and channel interlocking elements respectively and one side having an outer zig-zag surface configuration providing a plurality of at least three ribs on each slat, having in said hollow body three successive closed cell regions formed by two integral panel members extending across the hollow body from wall to wall substantially at rib positions with the intermediate cell longer

than the outer two and formed with internally extending flanges near each end thereof defining a central compartment with slots at either end thereof wherein the channel interlock member comprises a half cylindrical structure from which extends an L-shaped extension substantially closing the half cylindrical structure so that entry of the interlock tongue member is only permitted from the ends of the slat and wherein the hollow body terminates in two end pieces one comprising



said L-shaped extension substantially perpendicularly disposed to the side walls and arranged to meet face to face to form a substantially weathertight crease along the zig-zag surface directly below an adjacent said rib when two adjacent slats are interlocked in closed position, thereby to allow rain to run downwardly off the zig-zag outer surface ribs without penetration to the inside of an assembled shutter configuration of a plurality of adjacent slats.

4,343,341

PNEUMATIC TIRE AND WHEEL RIM ASSEMBLIES

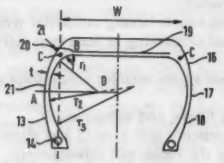
William L. Jackson, SuttonColdfield, England, assignor to Dunlop Limited, London, England

Continuation of Ser. No. 769,679, Feb. 17, 1977, abandoned. This application Dec. 27, 1978, Ser. No. 973,730

Claims priority, application United Kingdom, Feb. 17, 1976, 6112/76

Int. Cl.³ B60C *9/20, 13/00*

U.S. Cl. 152—353 R **3 Claims**



1. A radial pneumatic tire comprising a tread, a tread-reinforcing breaker assembly beneath said tread and extending across the full width thereof, a pair of tire beads, a pair of flexible tire sidewalls each radially extending between a respective one of said beads and a respective edge of said breaker, said tire being reinforced by a reinforcing carcass ply of relatively inextensible cords, said breaker having both at least one low angle ply and at least two high angle plies, one of said high angle plies being above and one of said plies being below said low angle ply to make the breaker substantially transversely rigid so as to resist bending moments about its center and inward pull of said edges by said sidewalls when said tire is inflated to its normal working pressure and to minimize cross-sectional circularity of the tire when so inflated, each of said sidewalls extending from said breaker assembly towards a bead wire core along an arc defining a flex zone which has a respective center of curvature, said arc beginning at a first point adjacent said breaker assembly where the thickness of said sidewall is substantially twice the minimum thickness of said sidewall and ending at a point defined by the intersection of a vertical line extending through said first point with said sidewall, said sidewalls being formed to have a shape when the tire is inflated to its normal working pressure such that the tangent of half the angle subtended by the arc of each of the flexible sidewalls at its respective center of curvature is less than +0.85, said angle controlling the pneumatic constant of said tire wherein a decrease in said angle and the arc defining said angle resulting from the increased transverse rigidity of said breaker reduces the circularity of said sidewalls, increasing said pneumatic constant, resulting in an increased load capacity of said tire.

4,343,342

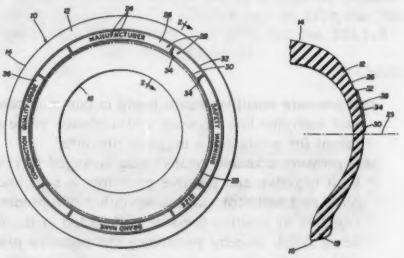
UNIFIED MODULAR INDICIA MARKING FOR RUBBER ARTICLES

Peter McDonald, Hudson, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 25, 1981, Ser. No. 247,454

Int. Cl.³ B60C *13/00*

U.S. Cl. 152—353 R **15 Claims**



1. A pneumatic tire having, on the base surfaces of each of its two sidewalls, information-bearing indicia markings contained within several of a plurality of sequentially-adjacent modules, said modules forming a segmented annular band concentric with the tire sidewall, wherein said plurality of sequentially-adjacent modules on one sidewall is located substantially radially inwardly of the maximum section width of said tire and said plurality of modules on the other sidewall is located substantially radially outwardly of said maximum section width.

4,343,343

ELONGATABLE REINFORCEMENT CORD FOR AN ELASTOMERIC ARTICLE

Rene F. Reuter, Warken, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 29, 1981, Ser. No. 229,374

Int. Cl.³ B60C *9/00;* D02G *3/00*

U.S. Cl. 152—359 **6 Claims**

1. A composite cord for reinforcing an elastomeric article comprising a core composed of at least one unoriented polymeric filament selected from the group consisting of polyamides and polyesters, said core having an initial modulus of elasticity of between 1500 and 4500 newtons/mm^2 and an elastic limit of at least one kilogram, the cord further comprising at least one high tenacity substantially inextensible yarn spirally wrapped about said core, said core having an elongation at break of at least 200 percent and a length at break which

is greater than the length of said yarn, when said yarn is fully stretched out to permit stretching out of said yarn without rupture of said core, the cord having an elongation at break of at least 100 percent of its length before elongation.

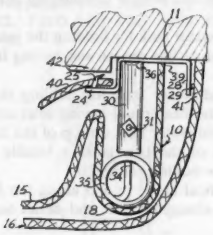
2. A vulcanized pneumatic tire reinforced with a plurality of composite cords, the tire having a first section height when mounted on a rim prior to inflation thereof and being inflatable to a second section height which is at least 50 percent greater than said first section height, each of said cords comprising a core composed of at least one unoriented polymeric filament which has a modulus of elasticity of between 1500 and 4500 newtons/mm^2 and an elastic limit of at least 1 kilogram, each cord further comprising at least one high tenacity substantially inextensible yarn spirally wrapped around said core, said core having a length at break which is greater than the length of said yarn when said yarn is fully stretched out to permit stretching out of said yarn without rupture of said core during inflation of the tire to said second section height, said core having an elongation at break of at least 100 percent of its length before elongation.

4,343,344

TIE BACK HOLDER WITH PLEAT SUPPORT

Andrew B. Shelton, 2783 Ben Hill Rd., East Point, Ga. 30344

Filed Dec. 6, 1979, Ser. No. 100,740
Int. Cl.^{3} A47H *1/00*
U.S. Cl. 160—349 D **7 Claims**



1. A drapery tie back holder for a drapery having one edge adjacent to a wall and an opposite edge remote therefrom and in a plane parallel to said wall, a tie back extending generally from said one edge around said drapery and back to said one edge, said tie back holder including a base defining means for fixing said base to said wall, a first arm extending from said base generally towards said opposite edge for holding a first end of said tie back, and a second arm extending from said base generally perpendicularly to said wall for holding a second end of said tie back, said drapery defining a plurality of pleats therein, including a final pleat adjacent to said one edge of said drapery, said tie back holder including a pleat holding means supported from said base between said first arm and said second arm for supporting said final pleat.

4,343,345

PROCESS OF APPLYING A TITANIUM DIOXIDE COATING TO A CENTRIFUGAL CASTING MOLD

Gottfried Brugger, Werksgelände 5, Mitterberghütten, Austria (A-5503)

Filed Aug. 18, 1980, Ser. No. 179,245
Int. Cl.^{3} B22D *13/10*
U.S. Cl. 164—33 **11 Claims**

1. A process for applying a heat-conductive gas-permeable, non-gas producing and porous coating to a centrifugal casting mold for casting copper or alloys thereof, said mold having an internal surface, said process comprising the steps of preheating the mold, spraying onto the internal surface of the mold after the preheating thereof a suspension of powdery material in a liquid dispersion agent of distilled water having a low-lime content, the main constituent of said powdery material being titanium dioxide, said suspension being substantially free of binding agents and surface active agents, said step of spraying said suspension being performed as the mold is rotated to form a thin layer therein and evaporating rapidly the liquid dispersion agent so that steam and foam of this agent escape in inward direction through said layer thereby loosening the texture of said layer.

4,343,346

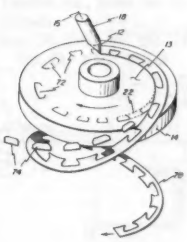
Patent Not Issued For This Number

4,343,347

METHOD OF MAKING PATTERNED HELICAL METALLIC RIBBON FOR CONTINUOUS EDGE WINDING APPLICATIONS

Howard H. Liebermann, Schenectady; Peter G. Frischmann, Scotia, both of N.Y., and George M. Rosenberry, Jr., Hendersonville, Tenn., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 972,240, Dec. 22, 1978, Pat. No. 4,281,706.
This application Mar. 30, 1981, Ser. No. 249,033
Int. Cl.^{3} B22D *11/06, 25/00*
U.S. Cl. 164—463 **13 Claims**



1. A method of casting patterned metallic ribbons in helical form by chill block melt-spinning including the process steps of:

a. providing a substrate wheel, said wheel having major opposed top and bottom surfaces and a peripheral edge surface area interconnecting said major surfaces, said top surface lying normal to the axis of rotation of said wheel and being a casting surface;

b. providing a predetermined pattern on said casting surface forming thereby a patterned casting region, said pattern being delineated by means of barrier lines;

c. rotating said substrate wheel at a predetermined speed to impart to said patterned casting region a predetermined surface velocity;

d. positioning a crucible with respect to the moving patterned casting region with the orientation of the longitudinal axis of said crucible with respect to said patterned casting region being defined by the inclination angle α and azimuthal angle γ;

e. forming molten alloy of a predetermined composition in said crucible;

f. ejecting said molten alloy through an orifice in said crucible to form a melt stream having a preferred velocity, said orifice and said melt stream having axes substantially colinear with the axis of said crucible;

g. impinging said melt stream onto said moving patterned casting region; and

h. rapidly chilling said molten alloy impinging on said moving patterned casting region to form a continuous length of metallic ribbon edge-wound in a helical shape, said ribbon having a substantially uniform cross section, a pair of substantially parallel major surfaces, a pattern of cutouts therein corresponding to said predetermined pattern on said casting surface, and inner and outer peripheral edges of constant radii defined by the motion of said patterned casting region at the locus of impingement of said melt stream thereon.

4,343,348

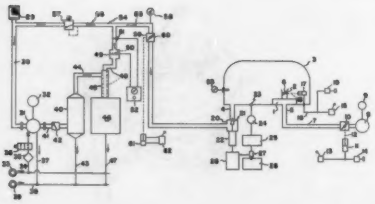
APPARATUS AND METHODS FOR SIMULATING VARYING ATMOSPHERIC CONDITIONS

George Scourtes, Livonia, Mich., assignor to The Allen Group, Saginaw, Mich.

Continuation of Ser. No. 912,009, Jun. 2, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 156,982

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—1 **11 Claims**



7. In a method of simulating different atmospheric conditions within an enclosure that is sealed except for an air inlet and an air outlet, said method including exhausting air from said enclosure via said outlet and admitting air into said enclosure selectively at rates such as to establish within said enclosure a pressure that is selectively greater, lesser, or the same as ambient barometric pressure, the improvement comprising compressing air to be introduced to said enclosure in an excessively moisture rich environment to enable such moisture to absorb heat from the compressed air; separating compressed air and excess moisture during the compression of said air and discharging the excess moisture and compressed air along separate paths; extracting additional moisture from said air following its compression; and separating said additional moisture from said compressed air prior to the introduction of said compressed air to said enclosure.

4,343,349

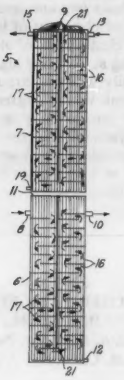
HEAT PIPE DEVICE AND HEAT PIPE FABRICATING PROCESS

Charles H. Busch, Jr., 1501 Parks Rd., Lake Orion, Mich. 48035

Filed Sep. 30, 1980, Ser. No. 192,366

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—1 **5 Claims**



5. An energy saving liquid to liquid heat exchange process for a dishwater or like device discharging hot waste water comprising;

providing a hot water tank for holding the waste water from the dishwasher or like device and having inlet and outlet pipes;

providing a cold water tank for holding the fresh water going to a water beater and having inlet and outlet pipes;

disposing the cold water tank on top of the hot water tank;

disposing inside of the two tanks a bundle of heat pipes containing low-boiling refrigerant

providing a vertical baffle in and along the length of each tank defining elongated inlet and outlet sections in each tank;

positioning and laterally staggering baffles in each tank and within each section and spaced along the length thereof;

causing the intake water to move in a path at right angles to the heat pipes and longitudinally of the respective inlet and outlet sections with the water in opposing sections in each tank moving in opposite directions;

evaporating the refrigerant in the heat pipes within the hot water tank extracting heat from the water in the hot water tank;

and condensing refrigerant in the tubes in the cold water tank, with the heat of condensation being transmitted to the water within the cold water tank, elevating the temperature of the fresh water leaving the heat exchanger above its entering temperature.

4,343,350

DOUBLE WALL TUBING ASSEMBLY AND METHOD OF MAKING SAME

Bonnie J. Campbell; Thomas G. Counts; James L. Cunningham, and Karl J. Youtsey, all of Decatur, Ala., assignors to UOP Inc., Des Plaines, Ill.

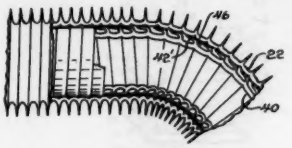
Filed Aug. 4, 1978, Ser. No. 930,942

Int. Cl.³ F28F *1/42, 13/12*

U.S. Cl. 165—11 R **10 Claims**

1. A double wall heat exchange tube assembly comprising an outer tube portion having external fins along at least the major portion of its length and an inner tube portion inside said outer tube portion, said inner tube portion having integral, generally transverse external fins along a portion of its length, said fins

on said inner tube portion having their tips bent over so as to be generally parallel to the axis of the tube assembly, said inner and outer tube portions being in firm, mechanically bonded relation to each other along the finned portions thereof with the bent over tip portions of the inner tube portion contacting the inner wall of the outer tube portion so as to define a helically continuous chamber between the inner and outer finned



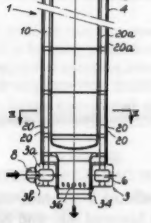
tube portions in the fin space of the inner tube portion which underlies the bent tip portions, said helically continuous chamber being sufficiently open to permit the flow of leakage fluid therethrough and the detection of leaks through the walls of either tube portion into said chamber, said inner tube portion having a non-smooth configuration over at least a substantial portion of its length within said outer tube portion for inducing turbulence in fluid flowing therethrough.

4,343,351

COUNTERFLOW HEAT EXCHANGER

Riccardo Belleli, Viale Hermada, 13 - Mantova, Italy

Filed May 14, 1979, Ser. No. 39,003
Claims priority, application Italy, May 16, 1978, 23455 A/78
Int. Cl.³ F28D *7/08;* F28F *9/02;* F22B *37/10*
U.S. Cl. 165—81 **8 Claims**



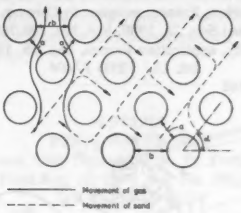
1. A heat exchanger comprising an upper tube plate and a lower tube plate arranged to face each other in parallel and coaxial relationship and having different mean diameters of the bored areas, an inner jacket and an outer shroud coaxial therewith and with said annular tube plates and attached to said tube plates and defining an annular interspace therebetween, a tube nest extending between said upper and lower tube plates and including a plurality of tubes, said tubes being connected to said tube plates and distributed substantially in a polar symmetry arrangement and having a rectilinear portion and at one end an S-like bent portion, the rectilinear portion of said tube nest defining a substantial thermal exchange zone enclosed with substantially uniform distribution within said annular interspace and wherein said S-like bent end of said tubes lays in a substantially radial plane with respect to the heat exchanger longitudinal axis.

4,343,352

HEAT EXCHANGER FOR GASES

Ole K. Bockman, Oslo, and Kjell Rydland, As, both of Norway, assignors to A/S Norsk Viftefabrikk, Oslo, Norway

PCT No. PCT/NO80/00012, § 371 Date Dec. 9, 1980, § 102(e) Date Dec. 5, 1980, PCT Pub. No. WO80/02193, PCT Pub. Date Oct. 16, 1980
PCT Filed Apr. 9, 1980, Ser. No. 220,036
Claims priority, application Norway, Apr. 9, 1979, 791191
Int. Cl.³ F28D *13/00;* F28C *3/16*
U.S. Cl. 165—104.16 **3 Claims**



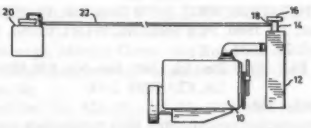
1. Heat exchanger for gases, constructed as a vertical shaft with upward gas flow between rows of staggered, horizontally disposed sets of tubes, downwardly restricted by a gas-penetrable bottom (2) and upwardly by the uppermost set of tubes, and over its entire vertical length containing a granular material (7) which is kept in motion by means of the essentially vertically upward flow of gas, characterized in that the ratio between the diagonal free opening a and the horizontal free opening b between the tubes (4) in the set of tubes is within the range 0.45:1–0.9:1 for controlling and restricting the vertical movement of the grains in the heat exchanger, thereby obtaining an approximately continuous temperature gradient in the gas-grain mixture over the entire height of the heat exchanger.

4,343,353

AUTOMOBILE RADIATOR FILTER

John Tsopelas, 15 Canlish Rd., Suite No. 2, Scarborough, Ontario M1P 1S5, Canada

Filed Nov. 26, 1980, Ser. No. 210,425
Int. Cl.³ F28F *19/00*
U.S. Cl. 165—119 **21 Claims**



11. In combination with an internal combustion engine cooling system having overflow port means permitting overflow of liquid engine coolant when the cooling system overheats, and providing suction as the cooling system cools, a filtering apparatus comprising:

filtering means for removing debris from engine coolant passing through the filtering means, including filter inlet means for receiving engine coolant to be filtered and filter outlet means for releasing filtered engine coolant;

a reservoir in fluid communication with the filter outlet means for receiving and containing the filtered engine coolant;

conduit means for placing each of the filter inlet means and the interior of the reservoir into fluid communication with the overflow port means to permit flow of engine coolant therebetween; and,

valve means for directing the flow of fluids through the conduit means so that in use

(a) engine coolant overflowing from the overflow port means is forced through the filter means into the reservoir and,

(b) the suction provided at the overflow port means when the cooling system cools draws filtered engine coolant from the reservoir.

4,343,354

STATIC CYLINDRICAL MONOLITHIC STRUCTURE HAVING A LARGE AREA OF CONTACT

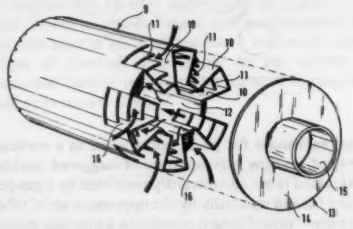
Jean Weber, Tarbes, France, assignor to Ceraver, Paris, France

Filed Sep. 25, 1980, Ser. No. 190,769

Claims priority, application France, Sep. 25, 1979, 79 23767

Int. Cl.³ F28D *17/04*

U.S. Cl. 165—165 **19 Claims**



1. A static, cylindrical monolithic, heat exchange structure having a large area of contact, said structure comprising circumferentially spaced radial walls and radially spaced circular walls intersecting said radial walls and forming at least two radial groups of ducts with each group conveying a fluid flow particular to the group with at least some of the radial walls constituting group boundaries, and wherein the circular walls of the parallel ducts forming at least one of said groups is cut out at at least one location along their length to facilitate fluid flow into or out of the parallel ducts of said group.

4,343,355

LOW STRESS HEAT EXCHANGER AND METHOD OF MAKING THE SAME

Alexander Goloff, East Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00027, § 371 Date Jan. 14, 1980, § 102(e) Date Jan. 14, 1980, PCT Pub. No. WO81/02060, PCT Pub. Date Jul. 23, 1981

PCT Filed Jan. 14, 1980, Ser. No. 130,489

Int. Cl.³ F28F *3/00*

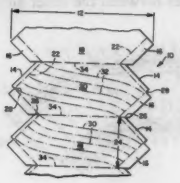
U.S. Cl. 165—166 **9 Claims**

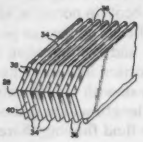
1. A heat exchanger core unit **(50)** comprising

(a) a unitary pleated sheet **(10)** having a plurality of walls **(18, 20)** with interconnecting, alternating first and second crest portions **(34)** extending between adjacent walls **(18, 20)** on opposite sides thereof, said first crest portions each interconnecting a first **(18)** and second **(20)** wall along a first side thereof and said second crest portions each interconnecting said second **(20)** and the next adjacent first wall **(18)** along a second side thereof opposite to said first side and

(b) closure means **(38,40)** to define alternating fluid flow passages **(36)** between said walls **(18,20)** by closing at least a portion of the space between adjacent walls **(18,20)** at each end thereof, said closure means **(38,40)** including

(c) tab means **(14,16)** extending along the ends of each wall **(18,20)** formed to engage tab means **(14,16)** on the next adjacent wall **(18,20)** to bridge a space between the ends of said walls **(18,20)**, said tab means **(14,16)** being arcuate in cross section and including a first tab **(16)** extending from a first wall **(18)** and a second tab **(14)** extending from a second wall **(20)** adjacent said first wall **(18)**, said second tab **(14)** engaging and overlying said first tab **(16)** when said sheet **(10)** is pleated, said first **(18)** and second **(20)** walls extending tangentially away from spaced points





(46,48) on the juncture formed by said first **(16)** and second **(14)** tabs, said second tab **(14)** terminating at a terminal edge which is between and spaced from said spaced points **(46,48)**, the second tab **(14)** being secured to the first tab **(16)** at said terminal edge **(42)**.

4,343,356

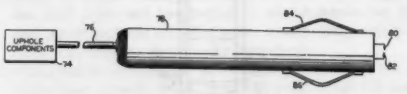
METHOD AND APPARATUS FOR TREATING SUBSURFACE BOREHOLES

Emmet D. Riggs; Eugene R. Brownscombe, and James R. Bilhartz, all of Dallas, Tex., assignors to Sonics International, Inc., Dallas, Tex.

Division of Ser. No. 295,694, Oct. 6, 1972, abandoned. This application Mar. 20, 1978, Ser. No. 888,352

Int. Cl.³ E21B *36/04, 37/00*

U.S. Cl. 166—60 **15 Claims**



1. Apparatus for descaling a borehole casing comprising:

a. a sonde for being lowered into said borehole,

b. a cable coupled to said sonde for raising and lowering said sonde in said borehole,

c. a low voltage source located external of said borehole,

d. a voltage multiplier interconnected with and adapted to travel into and out of said borehole with said sonde,

e. a first electrical circuit within said cable for connecting said low voltage source to said voltage multiplier,

f. arc means attached to said sonde for gasifying and ionizing a medium in said borehole whenever a high voltage arc is generated thereby creating a plasma which generates an initial shockwave in said medium to loosen scales of material followed by a rarefactionwave which forces loosened scale material back into the borehole where it falls to the bottom, and

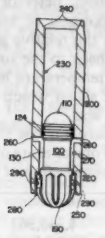
g. means coupling said voltage multiplier to said arc means at predetermined intervals to generate said high voltage arc.

4,343,357

DOWNHOLE SURGE TOOLS

Robert D. Yeates, 100 West Building, Midland, Tex. 79701

Filed Oct. 10, 1980, Ser. No. 195,825
Int. Cl.[3] E21B *23/04, 33/12, 34/10, 34/14*
U.S. Cl. 166—154 6 Claims



1. Apparatus for well completion and related downhole operations, wherein the well includes a bore and casing therefor, tubing within the casing, perforations or open hole and a packer for disposition between the tubing and casing, comprising:

(a) a tubular nipple having an upper end and a lower end, the upper end of the nipple having connection with the downhole end of the tubing, said nipple defining an internal abutment adjacent the lower end thereof, said nipple including plural pressure relief ports disposed above said internal abutment;

(b) an impact actuated surge plug, movably disposed within the lower end of the nipple, the uppermost portion of said plug extending beyond said pressure relief ports, said plug further including abutment means for complementary restraining engagement with the internal abutment of said nipple, said plug further including a positive ejection assembly, said positive ejection assembly being actuated upon partial ejection of said plug to permit only partial reentry of the plug into said nipple and thereby permit uninterrupted backsurge of the well;

(c) sealing means between said plug and said nipple said sealing means being disposed above said pressure relief ports; and,

(d) wherein said positive ejection assembly is disposed substantially within a housing provided within said plug; and,

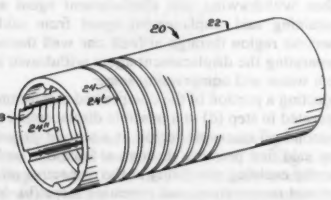
(e) wherein the positive ejection assembly of said plug includes resilient engagement means for complementary effect with the lower end of said nipple.

4,343,358

LASER SLOTTED PLASTIC WELL SCREEN

Gregory A. Gryskiewicz, North St. Paul, Minn., assignor to UOP Inc., Des Plaines, Ill.

Filed Feb. 7, 1980, Ser. No. 119,279
Int. Cl.[3] B23K *9/00*; E21B *43/08*
U.S. Cl. 166—227 2 Claims



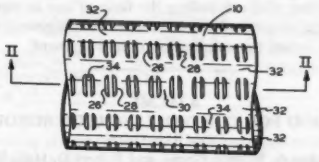
1. A plastic well screen comprising an integral, one piece wall portion having a cylindrical outside surface and a hollow interior, said wall portion having a longitudinally extending series of elongated transverse slots along its circumference which permit fluid to flow from outside said wall portion to said hollow interior, said slots being characterized in that the generally radially extending portions of the wall portion which define their side surfaces are angularly divergent in an inward direction and in that each of said transverse slots has a minimum width of opening on the outside surface of said wall portion which is less than about 0.020 inches, said wall portion including at least three, circumferentially spaced, longitudinally extending support portions which extend, uninterrupted, for the entire length of the screen and wherein said longitudinally extending support portions comprise rib portions projecting inwardly from said wall portion to provide axial strength to said screen and wherein said transverse slot portions overlie said rib portions.

4,343,359

PERFORATED PIPE

Horst J. Krause, 5305 Oleander Ave., Ft. Pierce, Fla. 33450

Filed Sep. 18, 1980, Ser. No. 188,327
Int. Cl.[3] E21B *43/08*
U.S. Cl. 166—233 3 Claims



1. A screen of the type described comprising sets of slits disposed along a helical path defined on an elongated tube, the slits of each set being parallel to each other and opening in opposite direction into the interior of the tube, said sets being so spaced along said path as to dispose the sets located 360° from each other along said path in alignment longitudinal of said tube and so spaced from the directly adjacent sets along said path as to provide circumferentially spaced longitudinal extending unslitted tube area.

4,343,360

METHOD FOR CONTROLLING UNDERGROUND COMBUSTION

Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

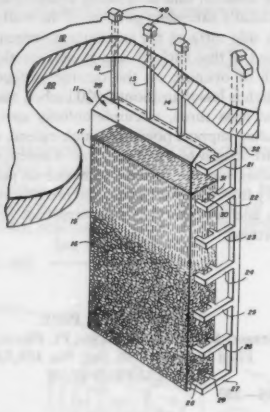
Division of Ser. No. 925,181, Jul. 17, 1978, Pat. No. 4,271,904.
This application Aug. 1, 1980, Ser. No. 174,601
Int. Cl.[3] E21B *43/247, 47/00*
U.S. Cl. 166—251 2 Claims

1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising

(a) monitoring the progress and orientation of the flame front in a vertical retort to determine the location of one or more segments of said flame front which exhibit unfavorable combustion characteristics by means of the Resistance Method which comprises:

inserting two or more pairs of resistance probes into the surface of the ground above a vertical retort and outside the sidewall boundaries of said retort, connecting said pairs of probes in an electrical circuit capable of measuring the resistance between pairs of probes wherein the progress, movement and spatial orientation of the flame front in three dimensions within said retort is correlated

to the difference between the resistances detected by each pair of probes, and



(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to speed up or retard the combustion in said segment.

4,343,361

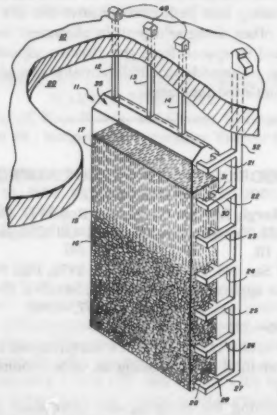
METHOD FOR CONTROLLING UNDERGROUND COMBUSTION

Irwin Ginsburgh, Morton Grove, and Robert D. Hall, Wheaton, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 925,181, Jul. 17, 1978, Pat. No. 4,271,904. This application Aug. 1, 1980, Ser. No. 174,608

Int. Cl.³ E21B *43/247, 47/10*

U.S. Cl. 166—251 **2 Claims**



1. In the in-situ combustion of a subterranean carbonaceous stratum, a method of controlling an underground flame front comprising

(a) monitoring the flame front to determine the location of one or more segments of the flame front which exhibit unfavorable combustion characteristics by means of the Seismic Method which comprises

initiating a seismic signal on or near the surface of the earth at a position to one side of an essentially vertical sidewall of said retort such that the angle of incidence of the seismic signal to said sidewall inherently results in predominantly downward reflected seismic energy,

positioning at least one seismic detector means on or near the surface of the earth at a second position to the same side of said essentially vertical sidewall intended to reflect said seismic signal,

detecting the reflected seismic energy as a function of time by using said seismic detector means, and

determining the position of said flame front from the enhancement of the relative amount of seismic energy being reflected back to the surface of the earth associated with high temperature induced refraction of said initiated seismic signal which occurs in the vicinity of the flame front, and

(b) injecting and controlling the flow of one or more gases into the vicinity of one or more of said segments to control and optimize the combustion of said segment.

4,343,362

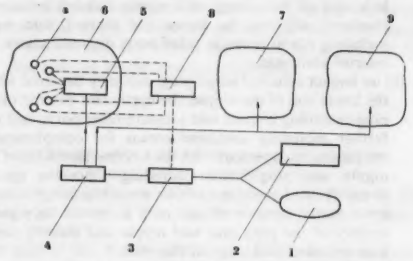
RECOVERY OF OIL FROM AN OIL RESERVOIR BY MISCIBLE DISPLACEMENT

Alexandru Turta, and Marius Cuculat, both of Cimpina, Romania, assignors to Institutul de Cercetari si Proiectari Pentru Petrol si Gaze, Cimpina, Romania

Filed Jan. 29, 1980, Ser. No. 116,551

Int. Cl.³ E21B *43/22, 43/20*

U.S. Cl. 166—267 **6 Claims**



1. A method of recovering oil from at least one oil reservoir by the miscible displacement process, said method comprising the steps of:

(a) injecting gaseous carbon dioxide mixed with at least 20% of impurities selected from the group consisting of methane or other gaseous impurities capable of increasing the miscibility thereof as a miscible displacement agent into a first oil reservoir region through at least one well thereof at a first pressure enabling miscibility at the respective oil composition and temperature;

(b) thereafter injecting water into said first oil reservoir region through at least one well thereof whereby oil is displaced from the porous structure of said region and, toward the end of the oil displacement, said displacement agent is present in residual saturation in said region at least partly dissolved in water.

(c) then withdrawing said displacement agent and water containing said displacement agent from said first oil reservoir region through at least one well thereof;

(d) separating the displacement agent withdrawn in step (c) from water and compressing same;

(e) injecting a portion of the compressed displacement agent separated in step (d) as a miscible displacement agent into a second oil reservoir region at a second pressure lower than said first pressure through at least one well thereof, thereby enabling miscibility at the respective oil composition and temperature, and repeating steps (b), (c) and (d) therewith; and

(f) injecting a portion of the compressed displacement agent recovered from said second oil reservoir region as a miscible displacement agent into a third oil reservoir region at

a third pressure lower than said second pressure through at least one well thereof, thereby enabling miscibility at the respective oil composition and temperature, and repeating steps (b), (c) and (d) therewith

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4,343,363

PROCESS FOR CLEANING A SUBTERRANEAN INJECTION SURFACE AND FOR SELECTIVELY REDUCING THE PERMEABILITY OF A SUBTERRANEAN FORMATION

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Jan. 2, 1981, Ser. No. 221,966
Int. Cl.[3] E21B *33/138, 43/22*
U.S. Cl. 166—281 14 Claims

1. A process for selectively reducing the permeability of a subterranean formation penetrated by a well bore in fluid communication therewith wherein an aqueous solution having a dry polymer dissolved therein is injected into the formation via the well bore until a face plug forms over an injection surface thereby significantly reducing the injectability of the aqueous solution, the process comprising:

(a) injecting into the well bore an aqueous acidic solution having an oxidizing agent dissolved therein, said oxidizing agent reacting with organic matter contained in said face plug to form lower molecular weight organic compounds causing dissolution of at least a significant portion of said face plug, polyvalent metals present in the oxidizing agent concomitantly being reduced to a lower valence state;

(b) injecting an aqueous spacer medium into the formation via the well bore to transport said lower molecular weight compounds and said reduced polyvalent metals into the formation; and

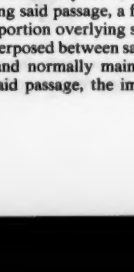
(c) injecting an aqueous solution having a dry polymer dissolved therein into the formation via the well bore, said dry polymer being crosslinked by said reduced polyvalent metals to form a plugging gel preferentially and predominantly within areas of the formation having relatively high permeabilities thereby improving vertical conformance and flow profiles of fluids subsequently injected into or produced from the formation.

4,343,364

SPRINKLER HEAD CONSTRUCTION

Hermann R. Glinecke, Pennington, N.J., assignor to Globe Fire Equipment Company, Standish, Mich.

Filed Jul. 6, 1979, Ser. No. 55,457
Int. Cl.[3] A62C *37/08*
U.S. Cl. 169—38 21 Claims



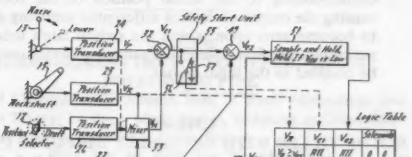
1. In a sprinkler head construction having a coupling adapted to be mounted on a fluid line and having a passage therein through which fluid may flow, a removable closure member normally sealing said passage, a frame carried by said coupling and having a portion overlying said closure member, and a strut assembly interposed between said frame portion and said closure member and normally maintaining the latter in sealing relation with said passage, the improvement wherein said strut assembly comprises a eutectic member sandwiched between a pair of elongate, thermal insulators extending in longitudinal prolongation of one another, said eutectic member and said insulators being encircled by a thermally conductive member.

4,343,365

ELECTRICALLY OPERATED HYDRAULIC POWER LIFT SYSTEM

Ganesh Rajagopal, Richardson, Tex., and Habil S. Basrai, Port Huron, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jul. 7, 1980, Ser. No. 166,731
Int. Cl.[3] A01B *63/111*
U.S. Cl. 172—4 5 Claims



1. A control system for a tractor hydraulic power lift system that includes a hydraulic cylinder coupled to a rockshaft and linkage system for raising and lowering an implement supporting means, a source of fluid under pressure, a main hydraulic valve means for controlling the flow of fluid to and from the hydraulic cylinder for regulating the height of the implement supporting means, and an electrohydraulic actuator having an operating member coupled to the main hydraulic valve means for operating the latter;

the control system comprising:

a feedback electronic control circuit including circuit means for mathematically combining a plurality of transducer means generated signals into a command signal;

the command signal comprising the output of a first differential summing device that receives a first input signal produced by a position transducer sensing the position of an operator actuated input handle for raising and lowering of an implement carried on the implement supporting means and substracts therefrom a second input signal produced as the output of a signal mixer that combines input signals from a position transducer means sensing the rockshaft position, a position transducer means sensing the draft position as set by an operator selector control knob and a transducer means sensing the magnitude of a draft force on a link of the linkage system;

a position transducer means coupled to the operating member of the electrohydraulic actuator for generating a signal sensing the actual position of the operating member;

a second differential summing device having as its inputs the command signal and the electrohydraulic actuator operating member position sensing signal and as its output an error signal representing the difference between the actual and desired positions of the implement;

a sample-and-hold circuit having an input to receive the error signal;

a clock logic means for transmitting the error signal at predetermined time intervals from the same-and-hold circuit to the electrohydraulic actuator to activate the latter to operate the main hydraulic valve to cause the hydraulic cylinder to move the rockshaft and linkage system in implement raising or lowering direction or to hold the

implement at a fixed height, the clock logic means including a clock means and a logic circuit having a plurality of inputs one of which is the output of the sample-and-hold circuit, a second of which is the output of the position transducer coupled to the rockshaft, and the third of which is an interruptible output of the first differential summing device;

and wherein the interruptible output of the first differential summing device is coupled to the logic circuit through a switch responsive to de-energization or re-energization of an ignition circuit of a tractor;

the switch having a latch means operable in response to de-energization of the ignition circuit that sets the switch output to the logic circuit to zero by grounding it;

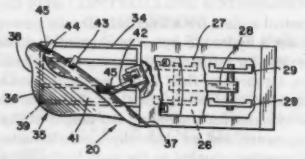
the switch being adapted to maintain the output of the first differential summing device to the logic circuit at zero until the operator places the input handle in a position corresponding to the actual position of the rockshaft causing the output of the first differential summing device to become zero upon which the switch latch unlatches permitting the first differential summing device output to be coupled to the logic circuit.

4,343,366

ROTOR TILLER WITH REVERSELY DIRECTED PLOW

Robert Walker, 5422 Hawthorne Pl., Washington, D.C. 20016

Filed Sep. 22, 1980, Ser. No. 189,807
Int. Cl.³ A01B *49/02*
U.S. Cl. 172—41 **6 Claims**



6. A walking type, power-operated, rotor tiller having rotatable tiller blades rotated unidirectionally in vertical planes on horizontal axes to advance said tiller along a path while cultivating a swath of ground, and a handle extending rearwardly and upwardly from said tiller blades for guidance, said tiller characterized by;

an elongated sheet metal, plow blade, having a tapered leading edge, an upstanding, arcuately-curved, rearward facing, concave plowing surface and an upstanding, rearward-facing, trailing, plowing edge, affixed to said tiller in rear of, and directly behind, said tiller blades to extend obliquely across the vertical planes of rotation of said tiller blades and face rearwardly of said tiller whereby said plow plows a furrow along said path only when said tiller is manually retracted along said path.

4,343,367

DRILLING MACHINE POSITIONING ARRANGEMENT

Toru Mashimo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

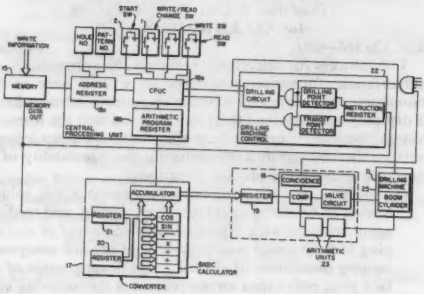
Continuation of Ser. No. 914,748, Jun. 7, 1978, abandoned. This application Nov. 18, 1980, Ser. No. 208,119
Claims priority, application Japan, Jun. 7, 1977, 52-66996
The portion of the term of this patent subsequent to Dec. 23, 1997, has been disclaimed.
Int. Cl.³ E21C *11/00*
U.S. Cl. 173—43 **7 Claims**

1. A positioning arrangement for a drilling machine and the like which comprises,

boom means on which the drilling machine is operably mounted;

memory means for storing coordinate values of the working distance and working direction from a reference point to a drilling point on a drilling pattern plane immediately in front of a working face to be drilled, said working distance and working direction being in a rectangular coordinate system, and including means for supplying said values as output from said memory means;

converter means connected to said memory means for converting said working distance and working direction values from the rectangular coordinate system to a boom coordinate system, and for providing said converter values as output;



positioning servo control means connected to said converter means and to said boom means for displacing said boom means according to said working distance and working direction values supplied as output from said converter means for bringing the drilling machine into adjustment with the drilling point in the drilling pattern plane; and

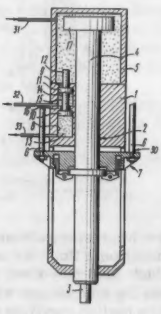
arithmetic means connected to said boom means and to said positioning servo control means for calculating values of the working distance and working direction upon displacement of the boom means and for feeding back said calculated values to said position servo control means.

4,343,368

IDLE STROKE BRAKING UNIT FOR AN IMPACT DEVICE

Vladimir Y. Fadeev, ulitsa Tereshkovoi, 6, kv. 180; Petr Y. Fadeeve, ulitsa Russkaya, 25, kv. 204; Vladlen V. Korobkov, ulitsa Shljuzovaya, 12, kv. 17; Rim A. Kulagin, ulitsa Tereshkovoi, 2, kv. 22, and Nikolai P. Ermilov, ulitsa Rossiiskaya, 12, kv. 56, all of Novosibirsk, U.S.S.R.

Filed Dec. 20, 1979, Ser. No. 105,859
Int. Cl.³ B25D *9/04*
U.S. Cl. 173—139 **14 Claims**



1. An impact device for producing impact pulses acting on the object of work comprising a body; a ram having a front

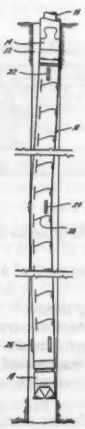
portion effecting on the object of work by impact pulses at the end of its forward motion and a tail portion with at least one boss near its cross-cut and installed in said body with a provision for reciprocating movement; a power cylinder connected with said body so that it accommodates said tail portion of ram and is filled with a compressible fluid medium under pressure intended to accumulate potential energy in said power cylinder when being compressed during the backward motion of the ram and to act on the cross-cut end of said tail portion of said ram on its forward motion; a backward motion unit of the ram mounted on said body and being capable of interacting with said ram for performing the backward motion of the ram and compressing said compressible fluid medium; a unit for braking said ram at the end of its idle motion comprising at least one space located in said body so that it opens at one side into said power cylinder and a cylindrical member one end of which is provided with a circular piston-like boss and the middle part is provided with another circular boss separated from said piston-like boss by an annular space, said cylindrical member being accommodated in said body space with a provision for reciprocating movement so that the other end of said cylindrical member protrudes from the body into the space of said power cylinder and is intended to interact with said boss of the tail portion of the ram while said piston-like and other bosses are located inside of said space of the body, contacting with its surface, wherein said one space comprises at least two chambers, with a first chamber formed by the end face of said piston-like boss and the surface of said space of the body near said one end of the cylindrical member, filled with a compressible fluid medium under pressure for performing the backward motion of the cylindrical member; and a second chamber comprising a braking chamber formed by the surface of said cylindrical member between said piston-like and other bosses and the surface of said space of the body and filled with a fluid; and a circular throttling projection in the body, inside of said body space, located between said piston-like and other bosses of the cylindrical member and forming with the surface of the cylindrical member a gap intended to throttle the fluid in the process of braking said ram on its idle motion.

4,343,369

APPARATUS FOR DRILLING STRAIGHT PORTION OF A DEVIATED HOLE

William C. Lyons; Scot L. Scurlock, both of Sante Fe, N. Mex., and Edward A. Zublin, Houston, Tex., assignors to Drilling Development, Inc., Houston, Tex.

Filed Sep. 19, 1980, Ser. No. 188,728
Int. Cl.³ E21B *7/08*
U.S. Cl. 175—75 **12 Claims**



1. A flexible, resilient drill guide, connectable at its upper end to a rotary drill string and at its lower end to a rotary drill bit, for guiding the direction of drilling a well bore deflected from the vertical, said drill guide comprising:

an inner flexible segmented tubular drive member for transmitting rotational forces and drilling fluid between said drill string and said drill bit; and

an outer flexible, resilient, tubular member for exerting directional drilling forces on said drill bit,

said outer tubular member having disposed along at least a major portion of its length a plurality of nonconnected shaped cuts extending therethrough and around a portion of the circumference thereof, by not severing said outer tubular member, and,

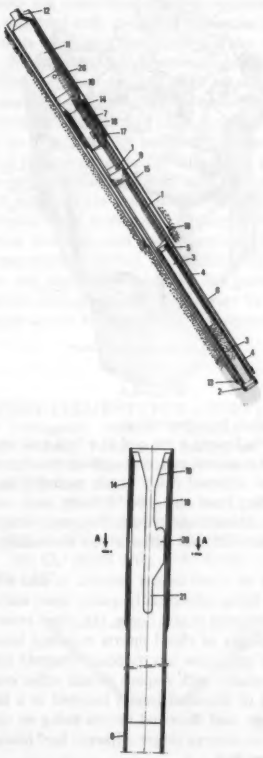
said outer tubular member in an unstressed condition being normally curved through a portion of its length and normally straight through a portion of its length.

4,343,370

TURBO-CORING DEVICE EQUIPPED WITH A FOLLOWING PIPE

Michel Chatard; Alain Sonnet, both of Rueil Malmaison, and Jean Thiery, Le Pecq, allof, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 10, 1980, Ser. No. 158,265
Claims priority, application France, Jun. 13, 1979, 79 15334
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—107 **4 Claims**



1. A coring device comprising a tubular body provided with a coring bit, said tubular body being housed in a following pipe which is provided with a reaming bit and being connected to a

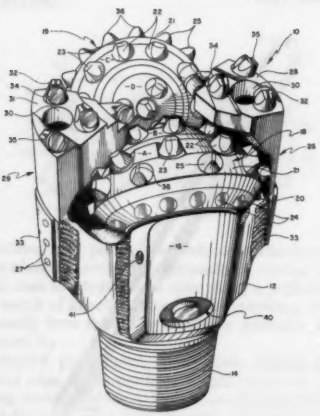
turbine through at least one hydraulic fluid distributor adapted to discharge through at least one lateral opening a fraction of the fluid flow leaving the turbine, while the remaining fraction of this fluid flow feeds said tubular body, releasable latching means permitting to connect said tubular body and said following pipe, wherein said fluid distributor is provided with means for automatic interruption of the fluid discharge through said lateral opening, when the lower part of said tubular body is obturated by ground formations, and wherein said releasable latching means are of the bayonet type and maintains said lateral opening of said fluid distributor at such a level as to discharge the fluid above said following pipe, this coring device further comprising, in combination with said fluid distributor, an annular sealing packer located between said tubular body and said following pipe, so that at the bottom of the device the fluid leaving said tubular body flows upwardly from said coring bit to said reaming bit.

4,343,371

HYBRID ROCK BIT

William Baker, III, Irvine; Lloyd L. Garner, Dana Point, and Charles R. Harris, Whittier, all of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Apr. 28, 1980, Ser. No. 144,515
Int. Cl.³ E21B *10/14*
U.S. Cl. 175—329 **5 Claims**



1. A hybrid rock bit comprising:

a rock bit body having a pin end at a first end and a cutting structure at a second end, said cutting structure consisting of a pair of opposed roller cones mounted to journaled legs extending from said rock bit body, said cutting structure further consisting of a pair of opposed drag bit legs on adjacent sides of said roller cones extending from said body;

a multiplicity of chisel inserts inserted in said roller cones, said inserts being substantially spaced apart and circumferentially positioned in said cones, the chisel crest of each of said multiplicity of chisel inserts mounted inwardly of a plurality of gage row inserts being oriented substantially circumferentially with respect to said roller cones;

a multiplicity of diamond inserts inserted in a face of said drag bit legs, said diamond inserts being so strategically positioned to remove ridges adjacent kerf rows in a borehole bottom; and

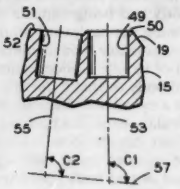
at least one extended nozzle formed in said face of each of said drag bit legs, said extended nozzle directing fluid toward said borehole bottom during rock bit operation.

4,343,372

GAGE ROW STRUCTURE OF AN EARTH BORING DRILL BIT

Donald L. Kinzer, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed Jun. 23, 1980, Ser. No. 161,701
Int. Cl.³ E21B *10/52*
U.S. Cl. 175—374 **3 Claims**



1. In a rolling cutter of an earth boring drill bit having a gage surface adapted to contact the sidewall of a borehole as the cutter rotates about its axis and rolls over the bottom of the borehole, the improvement comprising in combination:

first and second rows of inserts positioned adjacent each other on the cutter next to the gage surface, the second row inserts being positioned farther from the gage surface than the first row inserts and staggered so that the first and second row inserts alternate in contacting the bottom of the borehole;

each first row insert having a cylindrical base with a centerline that intersects the cutter axis at a selected angle c1;

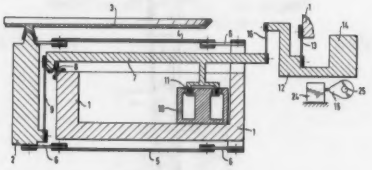
each second row insert having a cylindrical base with a centerline that intersects the cutter axis at a selected angle c2 that is less than the angle c1.

4,343,373

ELECTRONIC WEIGHING APPARATUS WITH CALIBRATING DEVICE

Eberhard Stadler, and Dieter Blawert, both of Göttingen, Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed Mar. 24, 1981, Ser. No. 247,219
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1980, 3012344
Int. Cl.³ G01G *19/52, 7/00, 23/01*
U.S. Cl. 177—50 **8 Claims**



1. An electronic weighing apparatus comprising:

a load pan;

a load receiver forming part of a parallel construction and supporting the pan;

a weight compensating means;

at least one two-armed force-transmitting lever having a short arm and a longer arm, and at its short arm connected to take up the force transmitted by the load pan, and at its longer arm connected with the weight compensating means; and

a built-in calibrating device comprising a two-armed calibrating lever having a center of gravity located on one side of the lever, while on the other side of the lever a

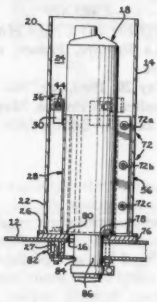
force-transmitting connection to the longer arm is provided via a coupling element whereby the force-transmitting connection can be selectively established or broken.

4,343,374

MUFFLER MOUNTING STRUCTURE

Larry A. Hollandsworth, Bettendorf, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00440, § 371 Date Apr. 17, 1980, § 102(e) Date Apr. 17, 1980
PCT Filed Apr. 17, 1980, Ser. No. 173,931
Claims priority, application Japan, Sep. 7, 1979, 54-123132[U]
Int. Cl.³ B62D *25/00;* F01N *7/18;* F16L *9/18, 39/00*
U.S. Cl. 180—69 R 2 Claims



1. In a structure (10) including a plate (12) having a hole (16) and a longitudinally extending member (18) extending generally outwardly through said hole (16), the improvement comprising:

a stack (14) having first (20) and second (22) end portions (20, 22), an internal cavity (24) extending from the first end portion (20) to the second end portion (22) and a flange (26) extending generally outwardly from the first end portion (22) and being in surrounding relation about the member (18) with the member (18) being positioned in the cavity (24);

means (27) for attaching said flange (26) to said plate (22);

a sleeve structure (28) distinct and removable from and surrounding and holding the member (18) and being within the cavity (24), said sleeve structure (28) extending at least a substantial portion of the length of said member (18);

a tab (30) attached to the sleeve structure (28) and extending generally outwardly towards the stack (14);

a bracket (36) attached to the stack (14) and extending generally inwardly towards the sleeve structure (28);

means (42) for removably securing the bracket (36) to the tab (30);

a base plate (76) having a central opening (78) having a periphery (80) which is smaller than said hole (16), said base plate (76) being positioned between said plate (12) and said flange (26) with said opening (78) aligned generally with said hole (16) and said periphery (80) extending inwardly over said hole (16);

said member (18) being sized to sit against said periphery (80); and

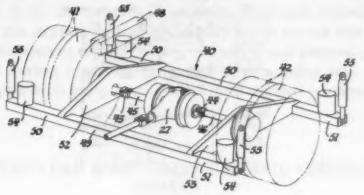
said sleeve structure (28) extending to adjacent said second end portion (22) and said stack (14).

4,343,375

VEHICLE DRIVE WHEEL SUSPENSION

Donald L. Manning, 4002 Normanwood Dr., Orchard Lake, Mich. 48033

Division of Ser. No. 86,857, Oct. 22, 1979, which is a continuation of Ser. No. 870,701, Jan. 19, 1978, abandoned, which is a continuation-in-part of Ser. No. 630,053, Nov. 7, 1975, abandoned. This application Jul. 9, 1980, Ser. No. 167,083
Int. Cl.³ B60G *9/000*
U.S. Cl. 180—73 R 1 Claim



1. A drive wheel suspension for a vehicle having a body, a pair of laterally spaced driving wheels, a differential securely mounted to the body between the wheels, and a pair of driving axles each having universal joints at its opposite ends connected to the differential and one of the wheels, said suspension comprising a dead axle whose portion inboard of said wheels is of generally rectangular configuration as viewed in plan and spring means for cushioning relative vertical movements of said body and dead axle, said dead axle including two parallel cross-members extending transversely of the vehicle and two wheel carrying members interconnecting said cross-members, said cross-members being spaced apart by said wheel carrying members such that when said wheels are carried by said wheel carrying members one of said cross-members is spaced rearwardly of the differential for freedom of movement in a generally vertical plane relative to the differential and the other of said cross-members is spaced forwardly of the differential for freedom of movement in a generally vertical plane relative to the differential, said rectangularly shaped dead axle being unobstructed between said cross-members and said wheel carrying members to permit said differential to be secured directly to and supported solely by the body whereby said cross-members throughout their extents are free to move vertically relative to said body and said differential.

4,343,376

VIBRATORY ELEMENTS FOR AUDIO EQUIPMENT

Tsunehiro Tsukagoshi; Shinichi Yokozeki; Sumio Hagiwara; Masataka Uchidoi; Toshikazu Yoshino, and Yasuyuki Arai, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

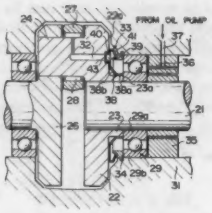
Filed Mar. 9, 1981, Ser. No. 241,554
Claims priority, application Japan, Mar. 18, 1980, 55-33362; Mar. 31, 1980, 55-40270; Mar. 31, 1980, 55-40271
Int. Cl.³ B32B *9/00, 5/16;* G10K *13/00*
U.S. Cl. 181—167 15 Claims

1. An acoustic vibratory element fabricated from a kneaded mixture comprising post-chlorinated polyvinyl chloride and flaky graphite powder, the graphite flakes being oriented substantially parallel to the surface of the element.

4,343,377
CRANK MECHANISM LUBRICATING SYSTEM

Shinichi Tamba, Kakogawa; Hitoshi Yamamoto, Nakamura, and Ryoji Uda, Kakogawa, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 8, 1980, Ser. No. 119,960
Claims priority, application Japan, Feb. 8, 1979, 54/15558[U]
Int. Cl.³ F01M 1/06
U.S. Cl. 184—6.5 6 Claims



1. Crank mechanism comprising crankshaft means journalled on crankcase means through main bearing means and having crankarm and crankpin means, connecting rod means connected with said crankpin means through second bearing means, lubricant oil passage means formed through said crankarm means and crankpin means and leading to said second bearing means, said crankarm means having a side surface facing said main bearing means, said lubricant oil passage means having inlet port means opening to said side surface of the crankarm means, means for supplying lubricant oil to said main bearing means at a side opposite to said crankarm means, oil receiver means provided between said main bearing means and said crankarm means for directing the lubricant oil which has passed through the main bearing means to the inlet port means of the lubricant oil passage means, said oil receiver means including an outer peripheral guide portion, an annular seating portion adapted to be placed along said side surface of the crankarm means and central holding portion which is comprised of a cylindrical portion adapted to be fitted to a cylindrical surface of the crankshaft means between the main bearing means and the crankarm means and a resiliently deformable portion between said cylindrical portion and said seating portion, said deformable portion being adapted to be resiliently deformed by being axially compressed by the main bearing means through said cylindrical portion.

4,343,378
METHOD AND APPARATUS FOR LUBRICATING BEARINGS

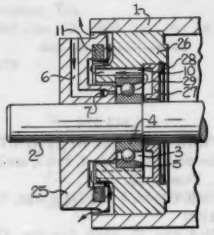
C. Hermann Bremer, Remscheid, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik, Remscheid, Fed. Rep. of Germany

Filed Sep. 26, 1980, Ser. No. 191,348
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939604
Int. Cl.³ D03J 1/00; F16N 7/26
U.S. Cl. 184—6.26 22 Claims

1. A method of providing lubricating oil to a bearing and characterized by the high speed application of the oil onto the bearing, and comprising the steps of;

directing under relatively low pressure, air having oil mist droplets entrained therein, through a passageway extending to a location adjacent the bearing to be lubricated, while

accumulating entrained oil from the moving air at a location in the passageway upstream of the discharge end, and then directing air under a relatively high pressure through the passageway to propel at least a portion of the accumulated

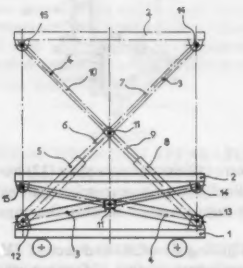


oil therein from the discharge end of the passageway at a high speed and onto the bearing.

4,343,379
PLATFORM LIFT MECHANISM

Georges Haulotte, La Ravoire, France, assignor to Creusot-Loire, Paris, France

Filed May 20, 1980, Ser. No. 151,749
Claims priority, application France, May 22, 1979, 79 13909
Int. Cl.³ B66B 11/04
U.S. Cl. 187—18 2 Claims



1. A lift mechanism comprising

(a) a mobile base;

(b) a support platform arranged above said base in substantially parallel orientation for movement with respect to said base;

(c) a pair of elevator scissors each having their opposite ends connected to said base and to said platform, respectively;

(d) each of said pair of scissors having three elements adapted to telescope within one another, said elements including

(i) a base element fixedly mounted on said base and having an interior diameter sufficient to receive in their entirety the two other elements when in their fully retracted position;

(ii) a medial element slidable within said base element between retracted and extended positions; and

(iii) an end element slidable within said medial element between retracted and extended positions;

(e) the medial elements of each of said pair of scissors being connected by a horizontal axle;

(f) means for coordinating the sliding movement of each of said medial and end elements of said pair of scissors, so that the movement of said medial element with respect to said base element is substantially equal to the movement of said end element with respect to said medial element;

(g) each of said pair of scissors being extendable and retractable independently of each other, whereby said platform is

displaceable longitudinally with respect to said base while remaining substantially parallel thereto.

4,343,380

DISK BRAKE ASSEMBLY

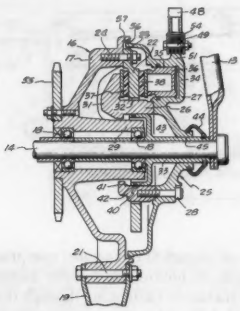
Takeshi Kawaguchi, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1980, Ser. No. 143,789

Claims priority, application Japan, May 29, 1979, 54-65529

Int. Cl.³ B60T *1/06*

U.S. Cl. 188—18 A **7 Claims**



1. In a disk brake assembly, the combination of: a stationary axle, a wheel hub, axially spaced bearings supporting said wheel hub on said axle, a support member having a stationary cylindrical sleeve mounted directly on said axle, a brake disk having opposite parallel faces and having a central opening, means at the outer periphery of the brake disk for securing it to said wheel hub, a caliper member carrying brake pads for contacting opposite faces of said brake disk, said caliper member having a first part supported through said cylindrical sleeve on said axle at a position axially spaced from said wheel hub and a second part extending through said central opening of said disk, said second part formed with a cylindrical bore which encircles a portion of the wheel hub, a cylindrical rim of said stationary cylindrical sleeve slidably supporting said cylindrical bore of said second part spaced radially about said wheel hub, means on said caliper member for clamping said brake disk between said disk pads, and means for preventing rotation of said caliper member.

4,343,381

DISC BRAKE FRICTION PAD RETAINING MEANS AND GUIDE SEAL

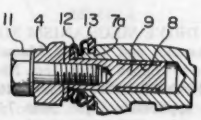
Tetsuo Haraikawa, Funabashi, and Koichi Tamura, Tokyo, both of Japan, assignors to Tokico Ltd., Kawasaki, Japan

Filed Jun. 16, 1980, Ser. No. 159,926

Claims priority, application Japan, Jun. 25, 1979, 54-87076[U]

Int. Cl.³ F16D *65/14*

U.S. Cl. 188—73.45 **3 Claims**



1. A disc brake comprising: a stationary member secured to a non-rotatable part of a vehicle and having a stepped portion, a caliper member supported on the stationary member for movement toward and away from a rotatable disc, at least one friction pad supported on the stepped portion of the stationary member for movement toward and away from the disc, a piston provided in the caliper member and acting on said one friction pad for moving it toward the rotatable disc, a pin and guide bore means provided between the caliper member and the stationary member for guiding the caliper member during movement thereof with respect to the stationary member, said means having a pin with a portion projecting from a guide bore, a dust boot covering the portion of the pin projection out of the guide bore, one end of the dust boot being integral with an intermediate portion of a flange secured to the stationary member said flange having a further integral portion radially extending from said intermediate portion and functionally separate from the remainder of said boot and extending towards the stepped portion sufficiently far to extend into the path of movement of said friction pad along said stepped portion and having a rigidity sufficient for preventing said one friction pad from being displaced off said stepped portion.

4,343,382

FRICTION PAD ASSEMBLIES FOR RAIL VEHICLE BRAKES

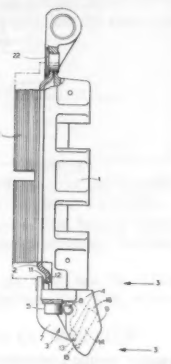
Gerald A. Ottewell, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Dec. 31, 1979, Ser. No. 108,671

Claims priority, application United Kingdom, Jan. 18, 1979, 7902044

Int. Cl.³ F16D *65/004*

U.S. Cl. 188—242 **6 Claims**



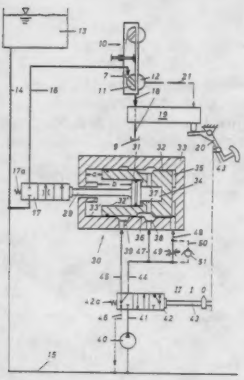
1. A friction pad assembly for a rail vehicle brake, comprising a shoe, a rigid backing plate detachably mounted on said shoe, a pad of friction material carried by said backing plate, and a keeper for engagement with one end of said backing plate, said keeper comprising a clamping member, wherein a pivotal connection pivotally mounts said clamping member on one end of said shoe for movement between an operative clamping position to urge said backing plate into engagement with said shoe and a retracted position spaced from said operative position in which said friction pad and said backing plate can be removed from said shoe, the friction pad assembly further comprising a mounting block provided on said shoe, said mounting block having spaced lugs and a bearing face, and said pivotal connection comprises a pin by means of which said clamping member is pivotally mounted between said spaced lugs, a wedge for urging said clamping member into said operative clamping position, said wedge being movable between an operative wedging position in which said wedge is releasably driven between said clamping member and said bearing face, and a retracted position in which the wedge is removed from engagement with said clamping member and said bearing face to enable said clamping member to be pivoted out of its operative clamping position and said friction pad and said backing plate can be removed from said shoe.

4,343,383

HYDRODYNAMIC TORQUE TRANSMITTING UNIT, PARTICULARLY FOR A HYDRODYNAMIC BRAKE

Klaus Brosius; Hans Lindenthal, both of Heidenheim-Mergelstetten, and Franz X. Zaunberger, Augsburg, all of Fed. Rep. of Germany, assignors to Voith Getriebe KG, Fed. Rep. of Germany

Filed Nov. 20, 1980, Ser. No. 208,787
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1979, 2948400; Jul. 8, 1980, 3025803
Int. Cl.³ F16D 57/02
U.S. Cl. 188—296 34 Claims



1. A hydrodynamic torque transmitting unit, for a hydrodynamic brake or for the like purposes, the unit including:

a toroidal working chamber containing a stator and a rotor;

an inlet line to the working chamber for filling the chamber with working fluid; an outlet from the working chamber for removal of working fluid therefrom, such that the selective filling of the working chamber through the inlet line and the removal of working fluid therefrom through the outlet line establishes the torque to be transmitted through the working chamber;

an inlet valve in the inlet line; the inlet valve being adjustable to a first position for establishing a large inlet flow in the inlet line and to a second position for establishing a smaller inlet flow in the inlet line;

inlet valve adjustment apparatus connected to the inlet valve for moving the inlet valve to either of the first and second positions thereof; the adjustment apparatus including:

first means for establishing a stage I condition, where the adjustment apparatus first moves the inlet valve to the first position thereof and automatically thereafter moves the inlet valve to the second position thereof after a predetermined time period; and

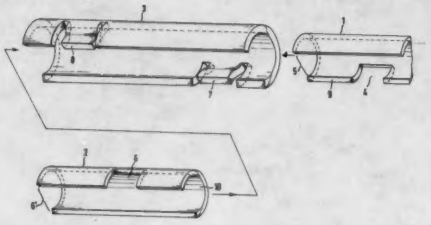
second means for establishing a stage II condition, where the adjustment apparatus moves the inlet valve to the first position thereof and retains the inlet valve in the first position thereof.

4,343,384

CONNECTOR APPARATUS FOR ELECTRICALLY CONDUCTIVE GUIDE RAILS

Alfred Mutter, Rheinweiler, Fed. Rep. of Germany, assignor to Wampfler GmbH, Weil am Rhein-Märkt, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,051
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852267
Int. Cl.³ B60M 1/00
U.S. Cl. 191—22 R 8 Claims



1. An improved electrical connector, comprising:

a first segment of hollow electrically conductive tubing having a first axial slot extending through the wall thereof;

at least one notch in said wall extending circumferentially at least partially around the exterior of said first segment;

a second segment of hollow electrically conductive tubing having a second axial slot extending through the wall thereof, said second segment having an inner geometry sized to receive said first segment of hollow tubing;

at least one first protrusion in said wall of said second segment extending radially into the interior thereof in position to fit into said at least one notch in said first segment when said first segment is inserted into said second magnet and rotated both to engage said at least one first protrusion with said at least one notch and to align said first and second axial slot;

a third segment of hollow electrically conductive tubing of the same outer geometry as said first segment, said third segment having a third axial slot extending through the wall thereof;

at least one notch in the wall of said third segment extending circumferentially at least partially around the exterior of said third segment; and

at least one second protrusion in said wall of said second segment, at the opposite end thereof from said at least one first protrusion, said second protrusion extending radially into the interior of said second segment in position to fit into said notch in said third segment when said third segment is inserted into said second segment and rotated both to engage said at least one second protrusion with said at least one notch in the wall of said third segment and to align said first, second and third axial slots.

4,343,385

AUTOMATIC DRIVE MECHANISM FOR VEHICLES

Toru Kosuda, Okazaki, and Takeshi Matsui, Aichi, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Feb. 29, 1980, Ser. No. 126,015
Claims priority, application Japan, Mar. 7, 1979, 54-26290
Int. Cl.³ B60K 41/02
U.S. Cl. 192—0.02 R 3 Claims

1. An automatic drive mechanism for an automotive vehicle for positioning an output shaft, comprising:

a housing;

an electric motor, having an output shaft, fixed to said housing;

a reduction gear mechanism, having an input and an output

gear, arranged inside said housing, said input gear being engaged with said output shaft of said electric motor;

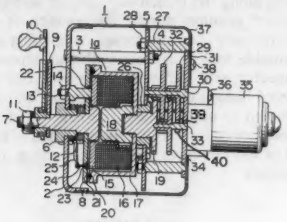
a coil cover fixed to said output gear of said reduction gear mechanism;

an electromagnetic coil surrounded by said coil cover;

a magnetic core member arranged in a central space of said electromagnetic coil and fixed to said coil cover;

an output shaft supported rotatably and shiftably in a direction of its axis by said housing;

a clutch plate fixed to said output shaft and being arranged to face said coil cover, said clutch plate having a first and a second angular slot;



a friction engagement member intervening between said clutch plate and said coil cover, and fixed to one of said coil cover and clutch plate;

feed means arranged to extend through said first angular slot and electrically connected to said electromagnetic coil for energizing the same; and

fixing members extending through said second angular slot for fixing said electromagnetic coil to said housing,

whereby, when said electromagnetic coil is energized, said clutch plate is coupled to said coil cover so that limited rotation of said electric motor is transmitted through said reduction gear mechanism, said coil cover and said clutch plate to said output shaft.

4,343,386

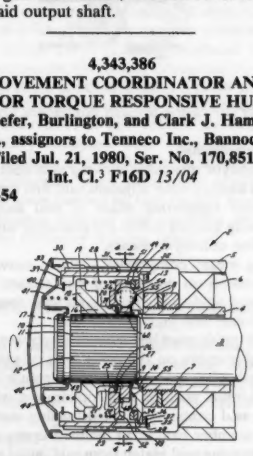
BALL MOVEMENT COORDINATOR AND CAM MEMBER FOR TORQUE RESPONSIVE HUB CLUTCH

David V. Schaefer, Burlington, and Clark J. Hamkins, Racine, both of Wis., assignors to Tenneco Inc., Bannockburn, Ill.

Filed Jul. 21, 1980, Ser. No. 170,851

Int. Cl.³ F16D *13/04*

U.S. Cl. 192—54 **7 Claims**



1. An actuator ball movement coordinator and cam member for a hub clutch of the ball and cam type, said hub clutch having a first non-rotatable working surface for being affixed to a non-rotatable spindle, a second rotatable working surface rotatable with, and axially moveable on, a selectively driveable axle journaled in said spindle, said rotatable working surface being affixed with a drive means for being selectively engaged with and disengaged from a driven means on a wheel hub mounted for rotation about said spindle, a plurality of actuator balls interposed between said first and said second working surfaces, each of said working surfaces having a plurality of detents, each of said detents in each working surface being sized to receive a portion of an actuator ball for enabling said working surfaces to be relatively close together when each actuator ball occupies a detent in each working surface to enable said drive means to be disengaged from said driven means, said ball movement coordinator and cam member comprising:

an annulus having a central opening for receiving said axle, said annulus being interposed between said first working surface and said second working surface;

a plurality of actuator ball receiving recesses radially outwardly spaced from said opening and equidistant from each other, each of said recesses having a radially innermost actuator ball receiving portion alignable with a detent in each of said working surface to enable an actuator ball contained in said innermost portion to occupy a detent in each of said working surfaces; a pair of diverging walls extending radially outward from the innermost portion of each actuator ball receiving recess; whereby, as said second working surface is forced to rotate with respect to said first working surface, each actuator ball contained in the innermost portion of a recess is forced out of the detents in each working surface to force said second working surface axially away from said first working surface thereby forcing said drive means into engagement with said driven means and a diverging wall of each recess cams an actuator ball radially outwardly out of alignment with the detents to maintain the drive and driven means engaged.

4,343,387

DEVICE FOR AUTOMATIC ACTUATION OF AN AUTOMOBILE CLUTCH

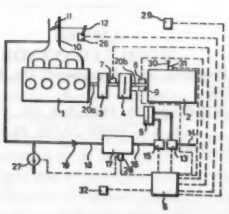
Peter Hofbauer, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Feb. 21, 1980, Ser. No. 123,440

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1979, 2906587

Int. Cl.³ B60K *41/28*

U.S. Cl. 192—0.076 **10 Claims**



1. In a motor vehicle, a device for automatically actuating a clutch arranged between the output shaft of the engine and the input shaft of the transmission comprising servo means coupled to said clutch for selectively actuating said clutch, first detection means for measuring the speed of said engine output shaft, second detection means for measuring the speed of said transmission input shaft, and control means coupled to said servo means and to said first and second detection means for controlling said servo means for actuating said clutch as a function of the speeds of said engine shaft and transmission shaft and their second derivatives with respect to time.

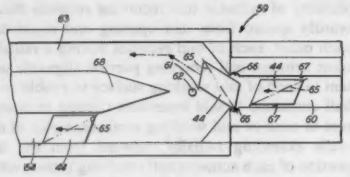
4,343,388
APPARATUS FOR SORTING ARTICLES

Loring E. Du Bois, Kansas City, and Lawrence D. Simpson, Summit, both of Mo., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 24,223, Mar. 26, 1979, Pat. No. 4,235,014, which is a division of Ser. No. 863,107, Dec. 22, 1977, Pat. No. 4,170,021. This application Aug. 21, 1980, Ser. No. 179,592

Int. Cl.³ B65G *47/24*

U.S. Cl. 193—47 **1 Claim**



1. An apparatus for sorting electronic articles in the shape of parallelepipeds having rhomboidal bases as major surfaces into two groups, each group being distinct from the other by the orientation of the bases of the articles, which comprises:

a feed track for advancing the articles in a single row, along a path with one or another of the major surfaces of the articles supported by a base surface of the track;

guides, spaced laterally in parallel along the track to support the advancing movement of each such article substantially without rotation of such article away from its direction of travel along the feed track;

first and second branch tracks coupled to the feed track and forming a fork at one end thereof;

a single obstruction fixedly mounted in the center of the path of the articles at the fork for engaging the leading edge of the articles and deflecting the articles into a selected one of the branch tracks depending on the direction in which the leading edge of the articles forms an acute angle with the direction in which the articles are advanced along the track; and

one recess on each side of the track located in the guides adjacent to the fork to receive a trailing corner of articles and permit rotation of the articles toward either branch track after contact of the leading edge of the article with the obstruction.

4,343,389
MOBILE CONVEYOR

William M. Ponstein, 3615 Wentworth Dr., SW., Grand Rapids, Mich. 49509

Filed Apr. 14, 1980, Ser. No. 140,185

Int. Cl.³ B65G *21/10, 41/00*

U.S. Cl. 198—316 **9 Claims**

1. A mobile conveyor arrangement for filling trenches and the like, comprising:

a conveyor having upstream and downstream ends, and means for transporting excavated trench material thereon from a digging point to a filling point of a trench;

mobile power means operably connected with said conveyor for intermittently moving said conveyor longitudinally along the trench to conveyor set up points, and laterally positioning said conveyor with respect to the trench;

means for pivotally connecting the upstream end of said conveyor with said mobile power means for pivotal movement in a substantially vertical plane; said connecting means comprising a connector having one portion adapted for detachable connection with said conveyor and another portion adapted to be rotatably mounted in a boom arm pivot block portion of said mobile power means;

stabilizing means depending from said conveyor and adapted to selectively engage the ground at the conveyor set up points along the trench and support said conveyor in the selected position during conveyance of the excavated material; said stabilizer means comprising a longitudinally adjustable foot connected with and depending from said connector; said foot supporting said conveyor in a cantilevered fashion over said trench, and being extended and retracted to pivot the conveyor at said boom arm pivot block portion for varying the elevation of the downstream end of said conveyor during conveyance of the excavated materials.

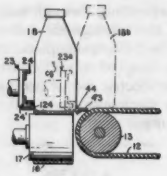
4,343,390
CASER UNIT FOR CONTAINERS

Herman Laub, III, 244 N. San Marino, San Gabriel, Calif. 91775

Filed Jul. 10, 1980, Ser. No. 168,305

Int. Cl.³ B65G *25/08*

U.S. Cl. 198—429 **6 Claims**



1. In a caser for casing upright containers, the combination comprising

first conveyor means,

second conveyor means for moving said containers in a column to a loading zone adjacent said first conveyor means,

the container supporting plane of said second conveyor means being located below the container supporting plane of said first conveyor means,

transferring means comprising a platen moveable from an initial position on one side of said second conveyor for transferring said containers from said second conveyor means to said first conveyor means,

a stationary guide member mounted between said first and second conveyors on the other side of said second conveyor so that it is spaced from said platen when said platen is in said initial position and cooperative with said platen to guide said containers to said loading station,

said guide member having an inclined upper surface, and

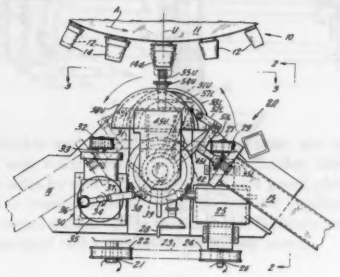
means for moving said platen from said initial position across said second conveyor to move said containers over said inclined surface and onto said first conveyor means,

said platen comprises an upper container engaging ledge projecting from said platen located in a horizontal plane extending through or below the centers of gravity of said containers while at said loading station and a lower container engaging ledge projecting from said platen and located below said upper ledge, said lower ledge projecting further from said platen than said upper ledge whereby said lower ledge initially solely advances said containers onto said guide member and said upper ledge engages those containers tilted by said guide member.

4,343,391
TAKEOFF AND RESTACKING DEVICE FOR CUP-LIKE CONTAINERS

John P. Skrypek, Mahwah; Robert Williams, Randolph, and James W. Dominico, West Paterson, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1980, Ser. No. 132,513
Int. Cl.[3] B65G 47/26
U.S. Cl. 198—438 15 Claims



1. Apparatus for removing cup-like containers one at a time from mandrels, extending radially from the turret of a container decorator, when each of these mandrels stops at a takeoff station, and delivering such containers to the rear of a stack located at a stacking region remote from the takeoff station; said apparatus including a drive arm, a support arm, a laterally movable first pivot operatively connecting said support and drive arms, first means connected to said support arm for holding each of the containers as they move between said takeoff station and said stacking region, cam means connected to said support arm at a location displaced from this first pivot the control the angular relationship between said drive and support arms as a function of the angular position of said drive arm about a second pivot laterally displaced from said first pivot, and drive means operatively connected to said drive arm for moving the latter about said second pivot as a center, said first means comprising a suction head which includes a bellows for engaging containers at said takeoff station, said bellows being substantially collapsed while carrying containers from said takeoff station to said stacking region, said bellows when substantially collapsed being sufficiently resilient to permit tilting of a container carried by said suction head in the event there is interference between said container and the mandrel from which the container is being removed.

4,343,392
METHOD AND APPARATUS FOR FEEDING ENVELOPES

James B. Ellis, Palatine; Mieczyslaw J. Lisiecki, Norridge, and Stephen Ruderman, Oak Park, all of Ill., assignors to AES Technology Systems, Inc., Elk Grove Village, Ill.

Filed Mar. 31, 1980, Ser. No. 135,354
Int. Cl.[3] B65G 47/82
U.S. Cl. 198—484 5 Claims

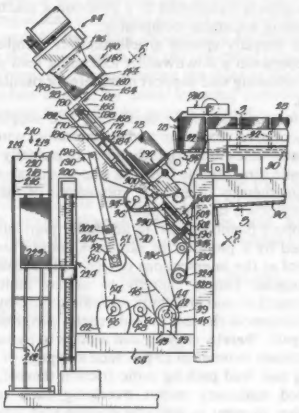
1. An apparatus for moving envelopes that have been segregated into batches with each said batch formed by a plurality of envelopes arranged in face-to-face relationship and having an exterior envelope at each end of the batch, said apparatus comprising:

(a) an endless loop conveyor oriented in a generally vertical plane and defining a conveying path spaced from and at a lower elevation than a transfer station, said conveyor including a pair of spaced-apart endless chains below said conveying path, said conveyor also including a plurality of spaced-apart, outwardly projecting planar flights oriented generally normal to said conveying path, each said flight being secured on each side of said conveying path to said chains, each pair of adjacent flights being adapted to receive therebetween one of said envelope batches, each said conveyor flight having a length dimension as measured normal to and across the conveying path that is less than the length dimension of each said envelope in said batch whereby opposite end portions of each said envelope in the batch extend beyond the ends of said flights;

(b) means for intermittently moving said endless chains in one direction of rotation to move said conveyor flights along said conveying path to carry each said batch of envelopes along at least a portion of said conveying path in said conveyor;

(c) a discharge station defined along a portion of said conveying path where each batch of envelopes is removed from said conveyor;

(d) an input car for receiving a batch of envelopes at said discharge station from said conveyor, said input car having a pair of spaced-apart, outwardly projecting members for engaging the bottom edges of the envelopes in a batch, said pair of outwardly projecting members of said input car being arranged to receive and permit passage of said conveyor



flights therebetween when said input car is at said discharge station, said input car further including a flat, generally U-shaped member adapted to engage a face of one of said two exterior envelopes in each batch, said U-shaped member having a configuration to at least partially encompass each said conveyor flight and to permit passage of each conveyor flight when said input car is at said discharge station and the conveyor flights are moved along the conveying path;

(e) guide means slidably engaged with said input car and extending between said discharge station and said transfer station for guiding said input car in reciprocative movement between said discharge station and said transfer station; and

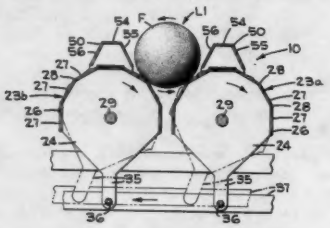
(f) means for reciprocating said input car along said guide means between said discharge station and said transfer station whereby a batch of envelopes can be lifted out of said conveyor from said discharge station by said input car and presented at said transfer station to permit removal of said batch from said input car and whereby, when said envelope batch has been removed from said input car at said transfer station, said input car can be moved in an empty condition back to said discharge station.

4,343,393

FEEDER FOR FRUITS AND THE LIKE

Gregory J. Larsen, Lakeland, Fla., assignor to FMC Corporation, Chicago, Ill.

Filed Feb. 13, 1980, Ser. No. 120,967
Int. Cl.[3] B65G *47/04, 13/02*
U.S. Cl. 198—533 3 Claims



1. A feeding apparatus in which a supply of randomly arranged substantially spherical articles are segregated to progress along an inclined feed path terminating at a downstream transfer station where the leading article of an abutting row of articles is transferred to a processing machine,

said feeding apparatus comprising:

inclined laterally spaced article support members defining therebetween a downwardly extending feed path,

means mounting said support members for oscillatory movement,

means for simultaneously oscillating said support members in successive clockwise and counterclockwise directions so that articles supported thereby are partially revolved in opposite directions to impart a side-to-side swaying action thereto thereby to enhance movement of the articles by gravity down said feed path,

said support members having generally undulating surfaces defined by a plurality of ridges extending longitudinally thereof at the intersections of generally arcuately spaced rectangular panels, thereby to impart limited upward movement to said articles in addition to side-by-side swaying movement thereof as said articles progress along said feed path, thereby causing said articles to partake of multidirectional movement to preclude stoppage of article flow along said feed path by static friction thereof,

elongated stationary means overlying each said support member thereby to laterally confine said articles to said path and prevent lateral passage of said articles transversely of said support members during said swaying movement, and,

said oscillating means further including a connection therein for adjusting the arc of oscillatory motion imparted to said support member.

4,343,394

APPARATUS FOR HANDLING FLUENT MATERIAL

Joseph W. Emmert, and Lawrence J. Sweeney, both of Willow Street, Pa., assignors to Addare Corp., Willow Street, Pa.

Filed Jun. 23, 1980, Ser. No. 161,889
Int. Cl.[3] B65G *33/12, 33/30*
U.S. Cl. 198—616 8 Claims

1. Apparatus for displacing fluent material, comprising:

a tube having an inlet at one location and an outlet spaced from said inlet,

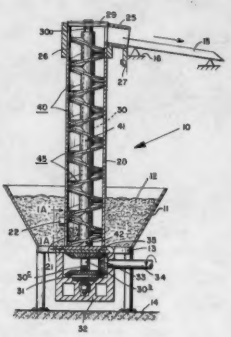
a shaft extending axially inside said tube,

means mounting said shaft for combined rotary and axial motion relative to said tube,

a first helical blade mounted to said shaft,

a second helical blade of a pitch opposite said first helical blade mounted to said tube,

said first and second helical blades each being interrupted at diametrical locations by a pair of edges defining narrow gaps, said gaps being arranged relative to one another so that said shaft mounted blades pass through the gaps in the tube mounted blades and said tube-mounted blades pass through the gaps in the shaft mounted blades when said blades are rotated relative to one another, and



means for rotating said first blade relative to said second blade,

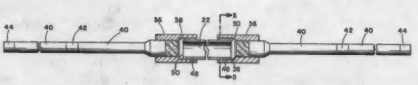
whereby fluent material admitted into the tube at its inlet is displaced axially therein to exit from the outlet.

4,343,395

ROLLER HEARTH FURNACE

Charles Lippert, Pinckney; Leonard G. Nowak, Ypsilanti, and Paul K. Shefsiek, Farmington, all of Mich., assignors to Holcroft & Co., Livonia, Mich.

Filed Nov. 10, 1977, Ser. No. 850,167
Int. Cl.[3] B65G *13/06*
U.S. Cl. 198—781 6 Claims



1. A transport mechanism for a roller hearth furnace comprising:

a cylindrical roller;

a rigid retaining sleeve positioned at each end of said roller, said sleeve including an open end having an inner cylindrical surface loosely surrounding the end section of said roller for supporting said roller and forming a slip joint with said roller end section; and

drive means attached to the end of said sleeve opposite said open end for rotating said sleeve;

said inner cylindrical surface of said sleeve, when rotated, frictionally engaging said roller end section, thereby rotating said roller.

4,343,396

ROLLER CONVEYORS WITH CLUTCH DRIVES

Alan L. George, West Northaw, England, assignor to Dexion-Comino International Limited, Hertfordshire, England

Filed May 5, 1980, Ser. No. 146,872
Claims priority, application United Kingdom, May 14, 1979, 7916613
Int. Cl.[3] B65G *13/07*
U.S. Cl. 198—781 12 Claims

2. A drivable load-carrying roller assembly comprising, in combination with a conveyor roller and a roller-driving means, clutch means disposed at an end of said conveyor roller for coupling said conveyor roller to said roller-driving means; said

load-carrying roller assembly further comprising a support member supporting said conveyor roller end, said support member having spaced flanges extending toward said conveyor roller end, with a guard plate slidably mounted between said spaced flanges for linear displacement wherein said guard

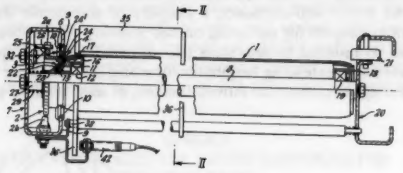


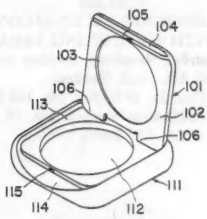
plate shields said roller-driving means from said conveyor roller, said roller-driving means being further shielded on further sides by said support member; said guard plate having operative means for selectively altering the position of said clutch means during sliding of the plate to facilitate coupling of said conveyor roller to said roller-driving means.

4,343,397

COMPACT HAVING STAY-OPEN LID STRUCTURE

Takamitsu Nozawa, and Takaharu Tazaki, both of Tokyo, Japan, assignors to Yoshino Kogyosho Co., Ltd., Tokyo, Japan

Division of Ser. No. 142,710, Apr. 22, 1980, Pat. No. 4,291,818.
This application Dec. 11, 1980, Ser. No. 215,496
Claims priority, application Japan, May 18, 1979, 54-61116
Int. Cl.³ A45C *11/00*
U.S. Cl. 206—37 **3 Claims**



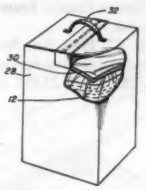
1. In a compact made of a synthetic resin comprising a container **(111)** for a cosmetic, and a lid **(101)** connected to the upper surface of said container at the rear end thereof, and swingable like a cover for a book to open or close said container, the improvement in which said lid **(101)** comprises a main body **(102)**, a generally flat rear end portion of said main body reduced in thickness to define a hinge **(107)**, a hinge base **(108)** contiguous to said hinge, a fitting member **(109)** depending from the underside of said hinge base **(108)**, and a leg **(106)** of desired length extending rearwardly from the rear end of said main body **(102)**, said leg being discontinuous in the area of said hinge, while said container **(111)** comprises said upper surface **(113)** which is flat at least in the rear end portion thereof where said lid **(101)** is connected to said container, and a hole **(116)** provided in said rear end portion thereof opposite to said fitting member **(109)** of said lid **(101)** for receiving said fitting member **(109)** therein to hold it against any shaky movement.

4,343,398

EMULSION PACKAGE AND METHOD OF MIXING THE EMULSION

Robert G. Snyder, Norway, Me.; John J. Clancy, Westwood, and Richard S. Brenneman, Natick, both of Mass., assignors to Engineering Industries, Inc., Norway, Me.

Filed Aug. 20, 1980, Ser. No. 179,730
Int. Cl.³ B65D *81/30, 35/28, 33/36, 85/00*
U.S. Cl. 206—219 **19 Claims**



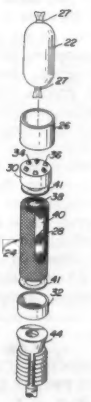
1. A package comprising a fluid product in a sealed bag, the fluid product having a normal viscosity of about 13,000 centipoises or less but being subject to separation into a paste and liquid, the liquid having a watery consistency and making up at least about 5% of the separated bag contents, the volume of product being at least one gallon and less than half the capacity of the bag, and the bag being substantially completely evacuated but for the product such that the separated contents of the bag may be remixed by compressing the sides of the sealed bag into face-to-face contact by hand, inducing turbulent flow of the bag contents for hydraulic mixing thereof.

4,343,399

TWO COMPONENT DEVICE FOR USE IN ANCHOR BOLTING AND METHOD OF ANCHORING

Natvarlal K. Patel, Warrensville Heights, and Anthony C. Plaisted, North Royalton, both of Ohio, assignors to Celtite, Inc., Georgetown, Ky.

Filed Apr. 13, 1981, Ser. No. 254,004
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—222 **11 Claims**



1. A device for securing a bolt in a bore hole, said device being adapted to be positioned in said hole and comprising first and second axially aligned chambers, said first chamber containing a first flowable component of a multicomponent self-setting mix, said device further comprising a second chamber having radially oriented discharge openings, said second chamber being provided with a second component of said mix,

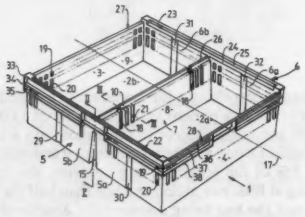
and rupturing means to induce flow of said first component into said second chamber whereby upon application of further inwardly directed axial force, said first and second components are urged radially of said second chamber through said discharge openings and outwardly of said second chamber toward said hole.

4,343,400

CONTAINER CRATE THAT CAN BE STACKED OR NESTED

Michel Faucillon, Baillet en France, France, assignor to Allibert, S.A., Grenoble, France

Filed Oct. 17, 1980, Ser. No. 197,877
Claims priority, application France, Oct. 17, 1979, 79 25779
Int. Cl.³ B65D *21/04, 25/04*
U.S. Cl. 206—507 **5 Claims**



1. A container crate of molded plastic or similar material, comprising a bottom and four sides forming a basically rectangular structure of the type that can be rotated 90 degrees in relation to other such crates to provide two stacking possibilities—either nesting within one another with considerable overlap of the sides, for compact storage or shipping of empties, or stacking of crates on top of each other with very little overlap but with the sides interlocking to prevent the stacked crates from sliding relative to each other, said crate further comprising:

at least one partition parallel to two of the crate's sides, which divides the crate into at least two compartments, step down stacking shoulders extending substantially the length of the other two sides, said partition protruding from the bottom of the crate and having a ridge at its top extending substantially at the level of the shoulders, the partition having the cross-sectional shape of an inverted V or symmetrical, inverted, short-stemmed Y forming a downward-opening groove between the two compartments, the crate further including:

at least one reinforcing tab connecting the two sides of said V near the bottom of the crate, with the tab being tapered, and at least one notch formed through the ridge and the upper part of said partition, the notch being directly located above and adapted for receiving a tab and into which the tab of a crate above is inserted when the crates nest within one another, said tab and notch being of similar width for permitting secured interlocking relation therebetween, and wherein said ridge and shoulders provide interlocking support during stacking.

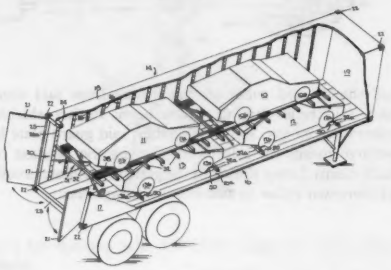
4,343,401

AUTOMOBILE CONTAINERIZED SHIPMENT SUPPORT KIT

John T. Paulyson, Wyckoff, N.J., assignor to United States Lines, Inc., Cranford, N.J.

Filed Mar. 31, 1980, Ser. No. 135,444
Int. Cl.³ B60P *3/08;* **B61D** *3/04;* **B65D** *69/00*
U.S. Cl. 206—577 **5 Claims**

1. A kit of assemblable component parts for loading and transporting automobiles as cargo within an enclosed, dry-cargo intermodal shipping container having a floor, respective sidewalls having opposed and spaced apart mounting tracks thereon and along substantially their respective lengths, a front wall, a top, and a rear doorway, said kit comprising apparatus for installing an elevated automobile track deck within said container comprising a plurality of manually installable and removable crossbeams respectively adapted for mounting on, and spanning between, opposed ones of said sidewall mounting tracks within said container, a plurality of automobile track sections adapted for mounting on said plurality of crossbeams when so installed to provide a pair of parallel, spaced apart wheel tracks extending longitudinally within said container for receiving an automobile moved thereon, at least some of said



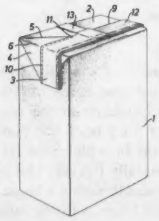
crossbeams and said automobile track sections being adapted by means thereon for connecting said track sections to said adapted crossbeams to substantially prevent vertical, longitudinal, and lateral movement of said track sections when so mounted on said installed crossbeams thereby to form said automobile track deck within said container, and a plurality of adjustable take-up strap means each adapted for connection to an automobile and for extending and connection to respective ones of said sidewall mounting tracks to substantially prevent movement of said automobile when the latter is on said automobile track deck.

4,343,402

PARALLELEPIPEDIC PACKING CONTAINER PROVIDED WITH AN OPENING ARRANGEMENT

Sven N. H. Holmström, Slogstorp, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Dec. 21, 1979, Ser. No. 105,915
Claims priority, application Sweden, Jan. 15, 1979, 7900315
Int. Cl.³ B65D *5/74*
U.S. Cl. 206—622 **8 Claims**



1. A packing container comprising:

a top end wall and a bottom end wall and side walls;

first and second triangular lugs extending from opposite sides of the top end wall and overlapping the adjacent side walls;

a first sealing fin extending along the top end wall from the tip of the first lug to the tip of the second lug, said first sealing fin being double-walled and having a base edge adjoining said top end wall and a free edge spaced from

said base edge, said first sealing fin having a sealing zone; and

said first sealing fin also having a perforation along said base edge, said perforation extending from the tip of one lug to a central portion of the top end wall, said first sealing fin being folded down against the top end wall after being sealed along said sealing zone, said perforation being spaced from said sealing zone, said sealing zone being located closer to said free edge of said first sealing fin than to said perforation, and opposing interior faces of said double-walled fin being unsealed along said perforation.

4,343,403

POLYVINYL ACETATE LATEX IMPREGNATED TOWELETTE

Wiley E. Daniels, Easton, Pa.; George Davidowich, Dunellen, and Gerald D. Miller, Belle Mead, both of N.J., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Division of Ser. No. 870,551, Jan. 18, 1978, Pat. No. 4,245,744. This application May 12, 1980, Ser. No. 148,618

Int. Cl.³ B65D *81/24*

U.S. Cl. 206—812 **10 Claims**

1. A packaged towelette composed of a sheet of nonwoven fibers impregnated with an emulsion binder of vinyl acetate-ethylene copolymer containing polyvinyl alcohol as a protective colloid, said binder being maintained temporarily insolubilized in gel-like form while in wet condition within said package by contact with a non-alkaline aqueous solution of boric acid, wherein said temporarily insolubilized binder is dissolvable by flushing in water.

4,343,404

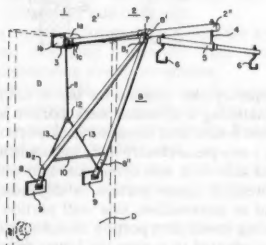
PORTABLE BICYCLE REPAIR RACK

Jeffrey A. Folsom, Lions Mouth Rd., Amesbury, Mass. 01913

Filed Jun. 20, 1980, Ser. No. 161,457

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—17 **1 Claim**



1. A portable bicycle repair rack which mounts on a conventional door comprising in combination:

(a) a boom having a first and a second end;

(b) a bracket means affixed to said first end of said boom for mounting over the top edge of a door;

(c) a bicycle supporting yoke means on said second end of said boom;

(d) a sleeve slidingly engaging said boom between said bracket means and said bicycle supporting yoke means;

(e) a plurality of elongate bracing means having a first end affixed to said sleeve and a second end extending angularly away therefrom; and

(f) cable means extending between said sleeve, said bracket means, and said second end of said bracing means for transferring weight from said bicycle supporting yoke means by way of said bracket means and said bracing means to said door.

4,343,405

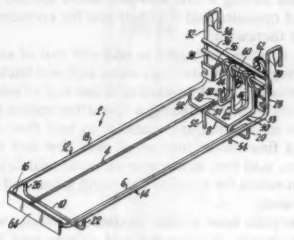
UNIVERSAL MOUNTABLE DISPLAY TRAY

Jean Virte, Domont, and Laurent Costa, Ville D'Avray, both of France, assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 27, 1980, Ser. No. 134,638

Int. Cl.³ B01D *35/00, 35/14*

U.S. Cl. 211—88 **7 Claims**



1. A universal mountable merchandise display tray comprising a trough-like receptacle for containing a plurality of items of merchandise, said receptacle comprising a bottom wall; a pair of side walls; a front wall and a rear wall, said rear wall comprising two spaced-apart members each extending from one of the side walls and terminating with rearwardly inverted U-shaped members adapted for securing on a support member; at least one support bar extends across and is secured to the two spaced-apart rear wall members; a plurality of first rod members pivotally secured on one support bar and terminating in inwardly U-shaped segments which when pivoted to an upright position provide rearwardly inverted U-shaped segments for securing on a support member; a plurality of second rod members pivotally secured on one support bar and each comprising a downward vertical segment extending with an inwardly horizontal segment and terminating in a downward vertical segment such that when pivoted towards an upright position, each terminal segment is adapted to be fed in an aperture of a wall support member until vertically oriented whereupon the display tray becomes secured to the wall support member.

4,343,406

CONTROL APPARATUS FOR A DISTRIBUTION CRANE EQUIPPED WITH A CABLE BUCKET

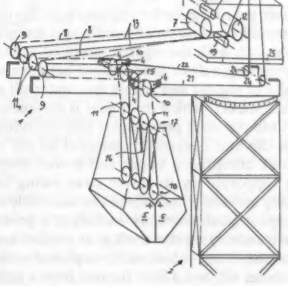
Jean Noly, La Clayette, France, assignor to Potain, France

Filed Jul. 30, 1979, Ser. No. 62,046

Claims priority, application France, Jul. 28, 1978, 7823042

Int. Cl.³ B66C *3/00*

U.S. Cl. 212—225 **13 Claims**



1. A control device for a distribution crane having a mast

and a boom disposed adjacent to said mast, said boom having one end pivotally mounted to said mast, an opposite end and at least one track extending longitudinally from said one end to said opposite end, said device comprising:

a distribution carrier movably mounted on said at least one longitudinal track, said one end of said boom further being inclined vertically above said opposite end to urge said distribution carrier toward said opposite end by gravity;

a bucket suspended below said distribution crane, said bucket having a first half-jaw and a second half-jaw disposed opposite said first half-jaw for cooperative engagement therewith;

means, mounted adjacent to said one end of said boom, for moving said distribution carrier and said bucket along said longitudinal track toward said one end of said boom, said moving means including a first drum means and a second drum means mounted parallel to said first drum means, and a first motor interposed said first and second drum means, said first motor connected to said first and second drum means for rotation therewith when said first motor is activated;

first epicyclic hoist means, mounted coaxially with said first drum means, for opening and closing said first half-jaw relative to said second half-jaw of said bucket, said first epicyclic hoist means including a second motor having a shaft and a third drum means mounted to said shaft of said second motor;

second epicyclic hoist means, mounted coaxially with said second drum means, for vertically moving said bucket up and down relative to said boom independent of said first epicyclic means, said second epicyclic hoist means including a third motor having a shaft and a fourth drum means mounted to said shaft of said third motor; and

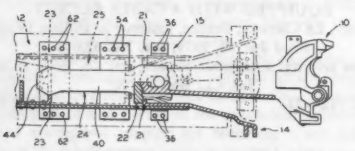
means for connecting said moving means to said first and second epicyclic hoist means to simultaneously rotate said first, second, third and fourth drum means so as to maintain said bucket level relative to said boom when said distribution carrier rolls along said track.

4,343,407

COUPLER LUBRICATING BEARING WEAR LINER CHANNEL SHAPED SUPPORT PLATE

Richard F. Murphy, Batavia, Ill., assignor to Holland Company, Aurora, Ill.

Filed Oct. 6, 1980, Ser. No. 194,019
Int. Cl.³ B61F *1/08*; B61G *7/10, 9/20*
U.S. Cl. 213—51 **4 Claims**



1. In a draft gear rigging for railroad cars having a channel shaped center sill opening downwardly and extending longitudinally of the car, with the rigging mounted at the end of the car and comprising a draft gear applied between stops spaced longitudinally of the car and within the center sill and defining the draft gear pocket, which draft gear is embraced by a vertical yoke within the draft gear pocket and extending longitudinally of the car and operably connected to the car coupler, with the yoke comprising upper and lower straps, with the yoke being supported by its lower strap riding on a support plate assembly secured at its ends at the underside of the center sill, said support plate assembly including a generally planar support plate underlying the draft gear pocket and extending crosswise of and being substantially coplanar with the underside of the center sill, and a liner formed from a polymer of dry self lubricating characteristics and aligned with the draft gear pocket and interposed between the support plate upper side and the yoke lower strap underside and forming a bearing surface on which the yoke lower strap inner end rides to dispose the yoke at its operative level within the center sill.

the improvement wherein said support plate is of light gauge steel and of channel shaped transverse cross-sectional configuration defining a planar web portion separating a pair of depending rigidifying side flanges that extend longitudinally of said plate and are integral and coextensive with same,

said plate being of one piece construction and of substantially uniform gauge along the length of its said web portion,

said plate having its respective ends secured to the centersill underside in transverse relation to the centersill to secure the support plate assembly to the centersill with said plate web portion top surface being substantially coplanar with the underside of the centersill,

with the liner being centered on said plate between said rigidfying flanges,

said rigidfying flanges depending below said plate web portion a dimension that rigidfies said plate web portion,

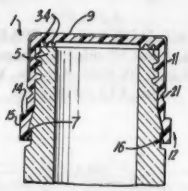
said liner having a width that is slightly smaller than the width dimension of said plate web portion.

4,343,408

TAMPER-EVIDENT PLASTIC CLOSURE

Ernest J. Csaszar, Mountainside, N.J., assignor to General Kap (P.R.) Corporation, San Juan, P.R.

Filed Apr. 21, 1980, Ser. No. 142,429
Int. Cl.³ B65D *49/12*
U.S. Cl. 215—258 **27 Claims**



1. A tamper-evident closure for use in connection with a container including a threaded neck portion and an annular collar portion below said threaded neck portion, said closure comprising a one-piece closure body including an end wall and a cylindrical side wall, said cylindrical side wall including an internallythreaded upper portion, a depending lower skirt portion, and an intermediate side wall portion therebetween, said depending lower skirt portion including an inwardly projecting bead adapted to engage the lower end of said annular collar portion of said container when said closure is completely threaded onto said container, said cylindrical side wall including a frangible portion comprising a circumferential groove formed on the outer surface of said closure to thereby uniformly substantially reduce the thickness of said intermediate side wall portion of said closure at a predetermined location on said intermediate side wall, said predetermined location being located above said inwardly projecting bead so as to divide said intermediate side wall portion into a first intermediate side wall portion located above said predetermined location and a second intermediate side wall portion located below said predetermined location, said first and second intermediate side wall portions being in substantial alignment with each other in the plane of said cylindrical side wall, said frangible portion therefore having a substantially uniform thickness circumferentially around said closure, and being designed to fracture in a substantially horizontal plane across said closure when said closure is unthreaded from said container so as to leave said depending lower skirt portion and said second intermediate side wall portion engaged to said annular collar portion after

said internally threaded upper portion and said first intermediate side wall portion of said closure have been unthreaded from said container.

4,343,409

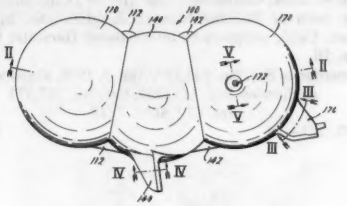
LARGE HIGH TEMPERATURE PLASTIC VACUUM RESERVOIR

David S. Silver, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 87,352, Oct. 22, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,478

Int. Cl.³ B65D *1/16, 1/42*

U.S. Cl. 220—72 **6 Claims**



1. An implosion resistant, blow molded, large capacity, one piece, rigid plastic reservoir having the configuration of intersecting spheroids, comprising:

(a) a plurality of hollow bulb portions, including a first side bulb, a second side bulb, and a bulb intermediate said first and second side bulbs and attached to each, wherein:

(i) said bulbs are each spheroid to the line of attachment with each adjacent bulb;

(ii) a first line drawn between the center of the intermediate bulb and the center of the first side bulb forms an obtuse angle of intersection with a second line drawn between the center of the intermediate bulb and the center of the second side bulb; and

(b) at least one mounting tower unitary with the wall of said reservoir and extending outwardly from the exterior thereof, said mounting tower comprising:

(i) a first portion suitable for mounting the reservoir, and

(ii) a second portion unitary with said first portion, attached at an angle thereto, whereby the first portion is strengthened against bending; and

(c) a reinforcing rib unitary with the wall of said reservoir located along each line of attachment between adjacent bulbs;

wherein the center of a bulb is the center of a complete sphere coincident therewith.

4,343,410

ANTI-SIPHON DEVICE

Donald E. Lenda, Williamsville, N.Y., assignor to Warehouse Bus Parts, Inc., Cheektowaga, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,839

Int. Cl.³ B65B *3/06*

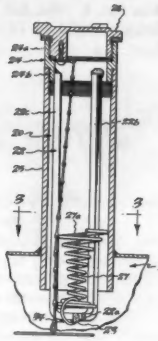
U.S. Cl. 220—86 AT **20 Claims**

17. An anti-siphon device adapted for permanent installation in a vehicle filler pipe having an inner end in communication with the vehicle fuel tank and an outer end normally closed by a manually operable closure element, said device comprising:

(a) an elongated rigid supporting unit having one end in neighboring relation to said outer end of said filler pipe and adapted to extend into and along said filler pipe, said supporting means having a length such that the opposite end of said supporting means is located beyond the inner end of said filler pipe in said tank, said supporting means having an open central region extending lengthwise from said one end forming a structure which allows free fluid flow along said filler pipe into said tank; and

(b) means for joining said one end of said supporting means to said filler pipe; and

(c) spring means carried by said supporting means in a manner such that a portion of such spring means is located within said filler pipe and a portion of said spring means is located beyond said inner end of said filler pipe in said tank, said portion of said spring means in said filler pipe extending across a major portion of the cross-sectional dimension of said filler pipe.



4,343,411

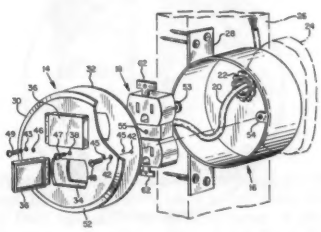
ELECTRICAL BOX COVER

Ronald D. Chesnut, 5230 Mason La., and James M. Tepper, P.O. Box 2093, Oretech Branch, both of Klamath Falls, Oreg. 97601

Filed Mar. 2, 1981, Ser. No. 239,369

Int. Cl.³ H02G *3/14*

U.S. Cl. 220—242 **5 Claims**



1. An electric box cover for covering an electrical receptacle and outlet box comprising:

a circular cover plate having one or more access openings to provide access to one or more corresponding electrical receptacles,

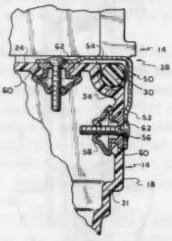
a circular gasket with a diameter at least slightly greater than that of said cover plate, said gasket having one or more openings which are in alignment with the openings of said cover plate when the two are fitted together in concentric relationship,

said cover plate including universal means for enabling said box cover to be used with several types of outlet boxes.

4,343,412
HINGE FOR CARRYING CASE

Donald G. Wilcox, Seymour, and Nobile Zambrano, Branford, both of Conn., assignors to Show-Pak Incorporated, New Haven, Conn.

Continuation-in-part of Ser. No. 236,049, Feb. 19, 1981. This application Apr. 6, 1981, Ser. No. 251,151
Int. Cl.³ B65D *43/14, 51/04*
U.S. Cl. 220—342 **7 Claims**

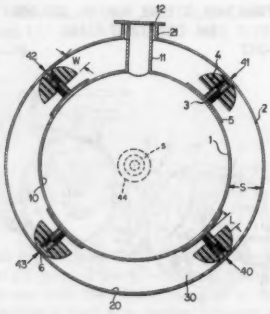


1. In a carrying case having a base and a cover for the base, an improved hinge construction comprising, said cover having a pair of oppositely directed hinge pins formed thereon, said base having a pair of spaced hinge pins receiving bosses formed therein for receiving and only partly surrounding said pins, and a locking strap associated with each boss and secured to said base, having intermediate portions overlying said pins.

4,343,413
DOUBLE-WALL VESSEL ESPECIALLY DEWAR FLASKS, WITH WALL SPACER

Johann Chatzipetros, Frechen, and Manfred Helten, Titz-Müntz, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 198,043
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1979, 2942164
Int. Cl.³ B65D *90/06*
U.S. Cl. 220—425 **6 Claims**

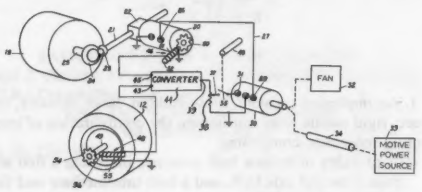


1. A double-wall vessel comprising:
an inner receptacle;
an outer receptacle spacedly surrounding said inner receptacle and sealed thereto, said inner receptacle defining an inner wall and said outer receptacle defining an outer wall juxtaposed with said inner wall but spaced therefrom by an interwall spacing; and
spacer means interposed between said walls, said spacer means including a plurality of spacer assemblies regularly spaced from each other, each of said assemblies comprising:
a threaded pin fixed to one of said walls and reaching toward the other of said walls, said pin having a length smaller than said interwall spacing but greater than a maximum fabrication tolerance of said interwall spacing, and
a thermally insulating body threaded onto said pin and engaging with a top of said body slidably said other of said walls, said top of said body having a maximum distance from said one of said walls when fully threaded onto said pin which is not greater than the minimum interwall spacing.

4,343,414
SEED PLANTER DRUM DRIVE SYSTEM

Wayne W. Lark, Clarendon Hills; Marvin D. Jennings, Naperville, both of Ill., and Marvyn J. Madeksho, Manhattan Beach, Calif., assignors to International Harvester Co., Chicago, Ill.

Continuation of Ser. No. 932,167, Aug. 9, 1978, abandoned. This application Sep. 15, 1980, Ser. No. 187,373
Int. Cl.³ A01C *7/18*
U.S. Cl. 221—13 **8 Claims**



1. A drum drive system for a seed planter including a main frame structure, a seed drum rotatably journalled on said main frame structure, fan means for supplying air under pressure to said drum, drive means for said fan means, and a wheel journalled on said main frame structure and engaging the ground to be rotated at a rotational speed proportional to the linear speed of travel of the planter over the ground, said drum drive system comprising:
DC generator means carried on said seed planter having output terminal means and field winding means, drive means for driving said DC generator means, DC motor means electrically connected to said output terminal means of said DC generator means and mechanically connected to said seed drum, ground speed signal generator means mechanically connected to said wheel to develop an electrical ground speed signal having an amplitude proportional to ground speed, converter means having an input electrically connected to said ground speed signal generator means and connection means for applying said output of said converter means to said field winding means of said DC generator means.

4,343,415
NAPKIN DISPENSER

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Continuation of Ser. No. 76,830, Sep. 19, 1979, abandoned. This application Sep. 11, 1980, Ser. No. 186,396
Int. Cl.³ B65H *1/12*
U.S. Cl. 221—59 **3 Claims**

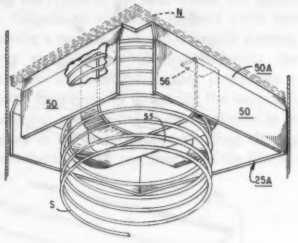
1. A dispenser for paper napkins arranged in a stack, each napkin folded in multiple plies having a final rectangular contour with the outermost lifting ply terminating in a straight edge extending across the width of the folded napkin along a line parallel to the top and bottom edges thereof, comprising
(a) a rectangular parallelopiped container having a rectangu-

lar end wall of the approximate dimensions of said folded napkins and four side walls fixed to said end wall,

(b) an ingress-egress wall secured to the side walls opposite said end wall and having a generally rectangular opening therein for loading and dispensing napkins into and out of said container, said opening having marginal edges,

(c) the edges of said opening in said ingress-egress wall being turned to form a smooth peripheral flange encompassing said opening, to facilitate egress of a napkin without damage thereto,

(d) means inside said container for resiliently urging napkins toward said opening, comprising a cup-like follower having a planar surface for supporting a stack of napkins, with marginal flanges extending generally normally from the edges of said surface and dimensioned to be slideable within the side walls of said container,



(e) a spider disposed within said follower comprising a pair of U-bars having end portions crossing each other and opposed portions at the opposite ends secured to the underside of said planar surface, and leg portions extending between said opposed end portions and defining relatively limited spaces between them and the marginal flanges of the follower, and

(f) a helical spring extending from the end wall of said container to said follower with a plurality of the turns at the movable end of said spring disposed within said spaces between the legs of said spider and marginal flanges, to serve as a stabilizing guide for said movable end of said spring, the follower and spring being otherwise unconnected.

4,343,416

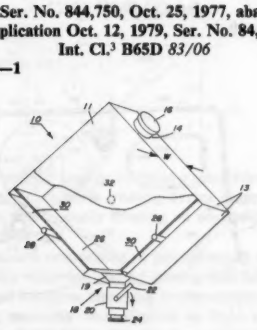
CONTAINER FOR NUCLEAR FUEL POWDERS

Benjamin F. Etheredge, and Richard I. Larson, both of Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Division of Ser. No. 844,750, Oct. 25, 1977, abandoned. This application Oct. 12, 1979, Ser. No. 84,135

Int. Cl.³ B65D *83/06*

U.S. Cl. 222—1 **1 Claim**



1. A method for storing enriched nuclear fuel material in blended powder form in a critically safe container and for discharging said powder from said container without particle size segregation comprising the steps of:

(1) providing a hollow, slab-shaped container body having two large planiform walls and four side walls with one critically safe dimension;

(2) providing a powder inlet on one side wall of said body adjacent a corner thereof;

(3) providing a normally closed powder discharge port at one corner of said body located approximately diagonal to said powder inlet;

(4) providing a pair of gas plenums each formed by attaching a porous metal, rectangular-plate member inside said body slightly spaced from a respective one of the two side walls adjacent said powder discharge port;

(5) providing a gas inlet for feeding gas to each of said plenums;

(6) placing an amount of pre-blended powder through said powder inlet into said container;

(7) opening said powder discharge port while simultaneously providing gas to said gas inlet at a moderate rate of flow which provides about 4 standard cubic feet per minute of gas flow through each square foot of surface of the porous plate members at 2 inches of H_2O pressure differential whereby the gas flow is limited to the region of the porous plate members and said gas flows out of said discharge port with the powder.

4,343,417

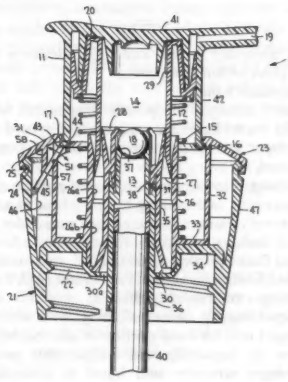
DISPENSING PUMP LOCKING MEANS

Douglas F. Corsette, 6559 Firebrand St., Los Angeles, Calif. 90045

Filed Feb. 13, 1980, Ser. No. 121,001

Int. Cl.³ B67D *5/32*

U.S. Cl. 222—153 **19 Claims**



1. In a dispensing pump having a finger-operated plunger head mounted for reciprocation on a pump body member secured in a fluid tight manner on a container of flowable product to be dispensed, reciprocation of said head effecting the dispensing of the product, a downwardly facing stop shoulder on said head, a control member rotatably mounted on said body member and having an axial opening through which said stop shoulder extends during plunger reciprocation, at least one upstanding locking finger secured to one of said members and being deflectable transversely to the axis of reciprocation of said plunger into the path of reciprocation of said stop shoulder, the improvement wherein first and second cam means are provided on the other of said members for engaging said finger to positively deflect said finger transversely into as well as out of the path of said stop shoulder, respectively, in response to relative rotary movement of said members, said first and second cam means lying opposite each other and

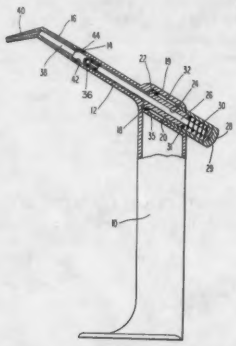
being in constant engagement with opposite sides of said finger during said relative rotary movement for supporting said finger against any buckling loads applied to said plunger when selectively immobilized upon deflection of said finger into said path of reciprocation, and for avoiding any interference between said head and said finger during during reciprocation of said head when said finger is deflected out of said path of reciprocation.

4,343,418

DISPENSER FOR DENTAL SEALANT

Anton Jurecic, Springfield, and James V. Romano, Skippack Township, Montgomery County, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 5, 1980, Ser. No. 156,840
Int. Cl.³ G01N *1/14*
U.S. Cl. 222—386 **9 Claims**



1. A dispenser for the controlled delivery of a liquid contained therewithin comprising

a dispenser handle.

a barrel arranged in operable disposition with said handle, said barrel having a rearwardly disposed flared portion,

a plunger arranged for reciprocable movement within said barrel,

a bushing fitted against said flared portion and in alignment therewith, said bushing having a head at a forward portion thereof of larger diameter then remainder of said bushing, said bushing head force-fitted against a forward portion of said flared portion of said barrel, said bushing and bushing head having an axial bore therethrough for receiving said plunger reciprocably therein,

a dispensing tip communicating with and frictionally engaged to a forward portion of said barrel,

means for imparting said reciprocable movement to said plunger whereby said liquid is controllably dispensed through said dispensing tip upon application of a dispensing pressure to said plunger, said plunger ejecting said dispensing tip from said forward portion of said barrel upon application to said plunger of a pressure excessive of said dispensing pressure.

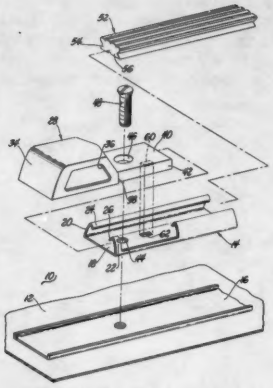
4,343,419

ARTICLE CARRIER TIE-DOWN AND END PIECE

Ray G. Mareydt, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Jun. 3, 1981, Ser. No. 270,183
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—326 **5 Claims**

1. An article carrier of the type comprising a low profile, hollow slat for mounting on a vehicle surface and a unitary member adapted to close one end of said slat, the slat including a base portion, side walls extending upwardly from said base portion and terminating in transversely spaced end portions vertically spaced above said base portion, said base portion and side walls defining an upwardly opening groove, a first opening formed through said base portion proximate one end of the slat, said unitary member including a main body portion having an opening therethrough for receiving an article tie-down member and a tongue-like portion extending longitudinally from the main body portion and adapted to project within said hollow slat whereby said main body portion encloses the one end of said slat, said tongue-like portion including an opening adapted to be in coaxial registry with the slat opening when the



tongue-like member is disposed within said slat, and fastening means extending through the coaxial openings to secure said slat and said unitary member to the vehicle surface, the improvement comprising:

a second opening formed in said slat;

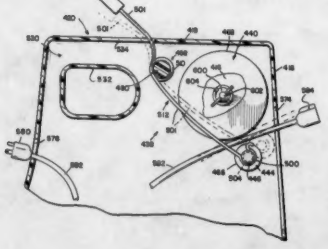
a stud-like element projecting from the tongue-like portion of the unitary member and longitudinally spaced from the opening in the tongue-like portion, the stud-like element coacting with the second slat opening to prevent rotation of the unitary member about the coaxially related openings.

4,343,420

RETRIEVAL AND STORAGE DEVICE FOR FLEXIBLE ELEMENTS

Robert F. Scott, P.O. Box 1442, Terre Haute, Ind. 47808

Continuation-in-part of Ser. No. 865,741, Dec. 29, 1977, Pat. No. 4,212,421. This application Dec. 12, 1979, Ser. No. 102,740
Int. Cl.³ B65H *17/22*
U.S. Cl. 226—49 **8 Claims**



1. An apparatus for retrieving and storing a flexible element having first and second ends, the apparatus comprising means for retrieving the flexible element and means for providing

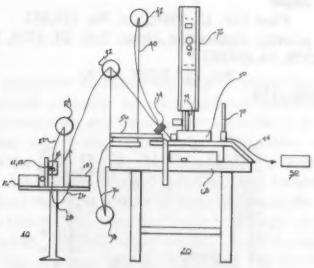
storage of the retrieved flexible element, the retrieval means being attached to the storage means so that the flexible element is stored in the storage means as it is retrieved, the retrieving means including a first wheel, means for holding the flexible element frictionally against the periphery of the first wheel, the holding means including a second wheel, means for supporting the second wheel for rotation, the support means having a flexible element retrieval position supporting the second wheel in closely spaced-apart relation to the first wheel with the space between the peripheries of the first and second wheels being sufficiently small that said wheels bear frictionally upon the surfaces of the flexible element to move the flexible element therebetween as the first wheel is turned, and means for turning the first wheel in a direction to cause retrieval of the flexible element between the first and second wheel peripheries, the turning means including a hand-manipulable crank, and means for connecting the crank to the first wheel, the support means comprising a bifurcated shiftable support yoke having two tines, each having a remote end and a handle portion, the tine ends including means for rotatably mounting the second wheel, and the retrieval means further comprises a housing providing means for pivotally mounting the support yoke, the support yoke being gravity-urged to a position in which the second wheel is in an orientation providing slippage of the flexible element between the peripheries of the first and second wheels.

4,343,421

TENSIONLESS FABRIC FEEDING APPARATUS

John J. Assmann; James L. Knox; Martin J. Kueny, all of Philadelphia, and James W. Smith, Havertown, all of Pa., assignors to Interco Incorporated, St. Louis, Mo.

Filed Sep. 2, 1980, Ser. No. 183,289
Int. Cl.³ B65H *17/42*
U.S. Cl. 226—113 **4 Claims**



1. An apparatus for feeding fabric in a tensionless and distortion free manner to a fabric treating device comprising:

a station for continuously forming an unsupported tensionless loop of fabric,

a feeding station comprising, a pin clamping assembly for sequentially receiving and advancing said fabric to a predetermined location, clamping means coupled to said pin clamping assembly and adapted to hold and maintain alignment of said fabric, thereby preventing any stretch or distortion, drive means coupled to said pin clamping assembly and clamping means; and

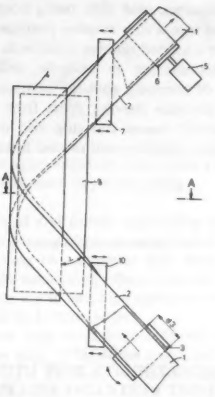
a collector station.

4,343,422

APPARATUS FOR DEFLECTING A MOVING WEB OF MATERIAL

Wilfried Dabringhaus; Helmut Glotzbach, and Karl Voss, all of Leverkusen, Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,383
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1979, 2948290
Int. Cl.³ B65H *23/32*
U.S. Cl. 226—197 **12 Claims**



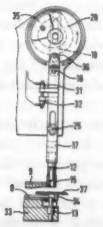
1. Apparatus for deflecting a web of material moving in its longitudinal direction by mechanical means both into a plane situated at right angles to the surfaces of the web and into a plane situated in the surface of the web, characterized in that a supporting element provided for the web during its deflection is an endless flat belt which the web mounts before it is deflected and which the web leaves after its deflection and in that cylindrical rollers and deflecting bodies in the form of tubes and/or tube segments having supporting rollers on their circumferential surface are provided, which guide the endless flat belt to deflect the web and subsequently return the belt to the point were the web mounts the belt.

4,343,423

MACHINE WITH FINGER PROTECTION GUARD

Otto Sauermilch, Stolberg, Fed. Rep. of Germany, assignor to William Prym-Werke KG, Stolberg, Fed. Rep. of Germany

Filed Apr. 3, 1980, Ser. No. 136,966
Int. Cl.³ B21J *15/28*
U.S. Cl. 227—1 **4 Claims**



1. In a machine having a stationary lower tool and a vertically movable upper tool, a combination comprising an electrically energized machine drive; a workpiece support mounting the stationary lower tool; a plunger mounting the movable

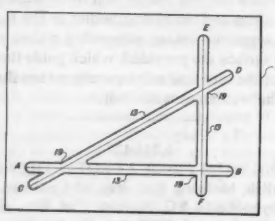
upper tool and being vertically movable towards and away from said support, said plunger being driven by said machine drive; a finger guard; means mounting said finger guard for movement ahead of said plunger toward said support, said means including a first link and a second link extending parallel to one another and to said plunger, said first link and second link being formed with a first slot in a lower portion thereof, a first stationary projection extending into said first slot, said second link having a second slot spaced from said first slot in a direction of said plunger, a second guide projection extending into said second slot, and spring means between said first and second projections, said links being normally moved by said spring means into a first relative position and being relatively shiftable to a second relative position in response to said finger guard encountering an obstacle; and circuit means, including a pair of normally abutting contacts on the respective links, said contacts moving apart from one another to interrupt said circuit means and stop said machine drive in response to relative displacement of said links.

4,343,424

CRACK SUSCEPTIBILITY TEST UTILIZING AN AIRPORT RESTRAINT SPECIMEN

Thomas W. Montemarano, Annapolis, and Michael E. Wells, West Hyattsville, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 29, 1980, Ser. No. 154,193
Int. Cl.³ B21K *25/00*
U.S. Cl. 228—104 **6 Claims**



1. A method for testing the susceptibility of welds to cracking under conditions of heavy restraint comprises the steps of:

forming a triangular pattern of intersecting grooves in one surface of a plate of the metal selected for welding, which plate is used to provide the restraint of the weld metal necessary to cause cracking of the weld metal;

depositing a first layer of weld beads in the triangular pattern of grooves;

cooling the weld layer to a predetermined temperature and inspecting the weld layer by visual and radiographic methods to detect the presence of cracks;

depositing a predetermined number of additional layers of weld beads over the prior weld layers, allowing each to cool to a predetermined temperature and detecting the presence of cracks appearing in each successive weld layer; and

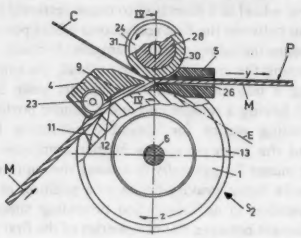
observing the cracks which appear at selected intervals and locations in the successive weld layers and recording the resulting pattern of weld cracks.

4,343,425

PROCESS AND DEVICE FOR THE PRODUCTION OF A COMPOSITE SECTION

Alfred Wagner, Steisslingen, and Adolf Ames, Hilzingen-Duchtlingen, both of Fed. Rep. of Germany, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Continuation of Ser. No. 898,659, Apr. 21, 1978. This application Feb. 6, 1980, Ser. No. 119,028
Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720122
Int. Cl.³ B21C *33/00, 23/22;* B21K *20/12*
U.S. Cl. 228—117 **13 Claims**



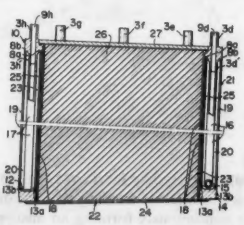
1. A process for the continuous extrusion of a composite metal section comprising a beam-like section and a facing strip of another material which forms at least part of the surface of the beam-like section, the beam-like section of said composite being produced by extruding a metal matrix through a shape-giving opening in a stationary extrusion die, wherein said metal matrix is fed to said stationary die at a first rate by a first endless face having a channel and a press wheel adjacent said first endless face for pressing said metal matrix into said channel and said strip is fed to said stationary die at a second rate greater than said first rate by a second endless face.

4,343,426

METHOD OF FABRICATING AN ANNULAR TANK

Katsuyuki Otsuka; Akio Todokoro; Yoshiharu Takahashi; Kazuhito Hiroe, and Yoshinobu Ishikawa, all of Tokai, Japan, assignors to Doryokuro Kaku Nenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 121,052
Claims priority, application Japan, Feb. 20, 1979, 54-18718; Feb. 20, 1979, 54-20418[U]
Int. Cl.³ B23K *31/00*
U.S. Cl. 228—170 **5 Claims**



1. A method of fabricating an annular tank for the storing of nuclear reaction material in an annular space using upper and lower dies elevationally disposed in space and inner and outer sheaths extended over the inner and outer peripheries of the upper and lower dies, said method comprising the steps of:

(a) preparing a first and a second annular blanks;

(b) cutting in the first blank a plurality of pairs of upper and lower longitudinal coaxial bar-like members, said mem-

bers extending upwards and downwards on the upper and lower surfaces of the first blank and forming protruding welding edges on the inner and outer peripheries of the lower surface of the blank;

(c) perforating the upper and lowr pairs of said bar-like members longitudinally and coaxially therethrough to form the upper die;

(d) forming a recess groove on the upper surface of the second blank and forming welding protruded edges on the inner and outer perpheries of the upper surface of the second blank to form the lower die; and,

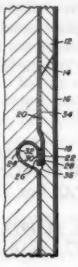
(e) contacting and welding the upper and lower dies at said protruding edges of the inner and outer perpheries of said first and second dies held elevationally in a predetermined position in space with the upper and lower edges of said inner and outer sheaths.

4,343,427

COMPOSITE CONTAINER WITH BALLOON FOLD

Jerry F. Sansbury, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Mar. 18, 1980, Ser. No. 131,098
Int. Cl.³ B31C *3/04;* B65D *3/04, 3/22*
U.S. Cl. 229—4.5 **11 Claims**



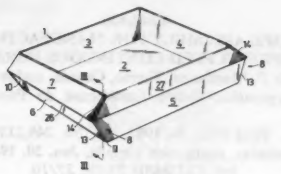
1. In a composite container adapted to accommodate a reduced internal pressure, an elongated self-sustaining body having opposed ends and inner and outer surfaces, a hermetic liner within said body substantially coextensive with and bonded to the inner surface thereof to define a hermetic seal, said liner including an integral inflatable fold formed therein spirally about the inner surface of the body along the length of said body between the opposed ends and being of generally constant width, said fold, along the full length thereof, including a first flap overlying said liner, a second flap overlying said first flap in unbonded relation to said first flap and connected thereto by a fold line, said first flap having a first portion along the length thereof adjacent said fold line and in unbonded free overlying relation to said liner and having a second portion adjacent said first portion and fixedly secured to said liner, the fixedly secured portion being substantially narrower than the width of said first flap and remote from said fold line, said first portion, said fold line, and said second flap forming a continuous section in unbonded free overlying relation to the liner and defining means for inward ballooning relative to the fixed second portion, the liner, and the inner surface of the body upon development of a reduced pressure environment within the container, and without disruption of the hermetic liner.

4,343,428

TRAY WITH HANDLES

Karl R. Persson, Halmstad, Sweden, assignor to Sprinter System AB, Sweden

Filed Aug. 13, 1980, Ser. No. 178,114
Claims priority, application Sweden, Jul. 27, 1979, 7906437
Int. Cl.³ B65D *5/24*
U.S. Cl. 229—31 R **19 Claims**



1. A tray of the type which is made from a blank of a stiff material and creased, said tray comprising:

a bottom;

first, second, third and fourth upstanding side walls, each said side wall having a bottom edge joined to said bottom and each having two opposite side ends; said first and third side walls each being adjacent to each of said second and fourth side walls; and each said side wall having a top edge opposite its bottom edge;

first and second flaps extending outward and downward from said top edge of said first and third side walls and defining an angle less than 90° therewith; each said flap having two side ends;

said second and fourth side walls each having a triangular projection in the plane thereof, at each side end thereof, each said projection being defined by an upper edge and a lower edge which intersect; and

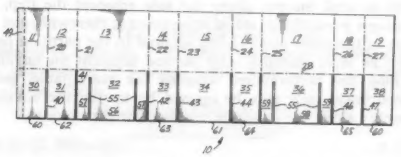
respective securing means maintaining each said side end of each said flap adjacent and stationary relative to said upper edge of a respective said projection, whereby said flaps define handles at opposite sides of said tray.

4,343,429

OCTAGONAL BULK BIN

James H. Cherry, Marion, Iowa, assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 1, 1981, Ser. No. 259,628
Int. Cl.³ B65D *5/08*
U.S. Cl. 229—38 **4 Claims**



1. The closure for an octagonal bulk bin having opposed pairs of side and end panels and opposed pairs of corner panels extending between said side and end panels, said corner panels being narrower than said side and end panels;

side closure flaps extending from and hinged to the lower edge of each of said side panels, and

corner closure flap extending from and hinged to said corner panels,

said bottom closure comprising in sequence;

said side closure flaps extending into said container, each of said side closure flaps having a pair of slots extending from their outer edges toward said side panels to which they are attached, said slots being substantially parallel to the sides of said side closure flap and dividing said side closure flaps

into a central section and side sections, said slots extending to the exterior side edges of said corner closure flaps;

said corner closure flaps extending through said slots and being beneath said side sections and over said central sections;

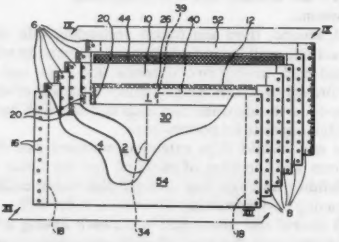
said end closure flaps extending through said slots and being beneath said corner closure flaps and said side sections, and between said corner closure flaps and said central section.

4,343,430

ENVELOPE ASSEMBLY FOR MANUFACTURE AS A PRESTUFFED CONTINUOUS FORM

Jean-Claude P. Martineau, Thurso, Canada, assignor to Canada Post Corporation/Societe Canadienne de Postes, Ottawa, Canada

Filed Mar. 30, 1981, Ser. No. 249,213
Claims priority, application Canada, Jun. 20, 1980, 355656
Int. Cl.³ B65D *27/08, 27/10*
U.S. Cl. 229—69 **6 Claims**



1. An envelope assembly for manufacture as a prestuffed, continuous form, comprising: two outer panels and a partition panel, all having matching pin hole feed strips along opposed sides of each panel, and an envelope sealing flap, the envelope sealing flap being integral with one of the panels, the envelope sealing flap extending between the pin hole feed strips along a flap side of the panel to which it is attached, the pin hole feed strips of all of the panels being secured together and separable from the remainder by pin hole feed strip line perforations, marginal edge portions of the remainder of all of the panels, adjacent the pin hole feed strip line perforations being secured together, the remainder of all of the panels also being secured together along their opposite side to the flap side, and having matching envelope opening line perforations adjacent one pin hole feed strip, one of the outer panels having the partition panel secured thereto, along the side adjacent the flap, for forming a prestuffable, sealed compartment therewith, and the other of the outer panels being secured to the partition panel along an inner marginal edge portion adjacent the envelope opening line perforations, whereby the prestuffable, sealed compartment only may be opened by tearing the envelope assembly along the envelope opening line perforations.

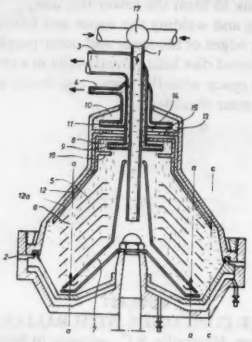
4,343,431

CENTRIFUGAL SEPARATOR

Holger Wehling, Solna, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 4, 1980, Ser. No. 183,943
Claims priority, application Sweden, Sep. 5, 1979, 7907385
Int. Cl.³ B04B *1/14*
U.S. Cl. 233—20 A **3 Claims**

1. A centrifugal separator comprising a rotor mounted for rotation about an axis and having a central inlet for a mixture to be centrifuged, the rotor also having a separating chamber for receiving said mixture and provided with peripheral sludge ports adapted to be opened intermittently for discharging heavier components separated from said mixture, the rotor also having a first outlet chamber communicating with the separating chamber and including outlet means for removing separated lighter liquid phase, the rotor also having a second outlet chamber and an annular overflow device through which said second outlet chamber communicates with the separating chamber, said second outlet chamber including outlet means for removing separated heavier liquid phase, said annular overflow device having passages located at an outer level relative to said rotation axis and also having an inner overflow edge located closer to said axis, said passages being dimensioned to pass all heavier liquid phase during normal operation of the separator but not to pass an increase in heavier liquid phase added to the separator before opening of said sludge ports, and means for intermittently supplying to the separating chamber said added heavier liquid phase, whereby said added heavier liquid phase acts to displace the interface level between the heavier and the lighter liquid phases radially inward in the separating chamber toward the rotation axis to a level corresponding to said inner overflow edge.

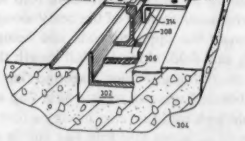


4,343,432

GUIDEWAY FOR CONTINUOUS WELDED RAIL

Frank J. Belenguer, P.O. Box 211, Stn. A, Kingston, Ontario, Canada (K7M 6R2)

Filed Jul. 23, 1979, Ser. No. 59,799
Int. Cl.³ E01B *29/02, 29/42*
U.S. Cl. 238—2 **17 Claims**



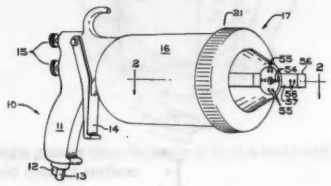
1. A guideway for tangent track for railway vehicles and the like comprising a plurality of supporting columns, a plurality of beams supported by said columns, a continuous welded rail supported by said beams and by said columns, wherein said rail is fixed to said columns and wherein said rail is maintained in tension between the locations where said rail is fixed to said columns when said rail is below a selected temperature which temperature is above the highest expected operating temperature of said rail.

4,343,433

INTERNAL-ATOMIZING SPRAY HEAD WITH SECONDARY ANNULUS SUITABLE FOR USE WITH INDUCTION CHARGING ELECTRODE

James E. Sickles, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 837,797, Sep. 29, 1977, abandoned. This application May 23, 1979, Ser. No. 41,663
Int. Cl.³ B05B 5/02
U.S. Cl. 239—3 12 Claims



1. A spray head of the internal-atomizing type adaptable for use on induction charging air-atomization spray apparatus suitable for applying a spray stream of particles of liquid material to a substrate, comprising:

a fluid delivery nozzle body having upstream and downstream ends and having passageways for transferring under pressure separate streams of air and of liquid material between said upstream and downstream ends;

means for operatively connecting the upstream ends of the passageways of said fluid delivery nozzle body to separate sources of air and of liquid material;

a spray stream discharge nozzle body comprising a generally hollow frustum-like portion with a wide-mouthed upstream end in which said fluid delivery nozzle body is nested and a narrower downstream end;

an air cap body having a downstream-oriented substantially planar exterior face and having a hollow interior portion between an upstream wide-mouthed open end and a narrower downstream end, in which said hollow portion of said spray stream discharge nozzle body is nested;

an orifice in the narrower downstream end of the hollow portion of said air cap body;

a spray stream discharge nozzle extension protruding downstream from the downstream end of said spray stream discharge nozzle body, said nozzle extension terminating in a spray stream discharge port;

an atomization chamber within said spray stream discharge nozzle body having an upstream inlet for receiving a stream of liquid material and having a downstream outlet orifice in communication with the passageway of said spray stream discharge nozzle extension;

a liquid stream delivery nozzle extension downstream from the downstream end of said fluid delivery nozzle body, said nozzle extension being of dielectric material and having an outlet orifice in communication with the upstream end of said atomization chamber for delivery of a stream of liquid material into said atomization chamber;

a first annular orifice in said atomization chamber inlet for delivering a stream of atomizing air for mixing with a stream of liquid material, said orifice defined by a downstream portion of the liquid delivery nozzle extension and the atomization chamber inlet;

induction charging means in said atomization chamber connectable to a direct current high voltage source for inducing electrostatic charge upon air-atomized particles formed from a stream of liquid material as said particles are formed; and

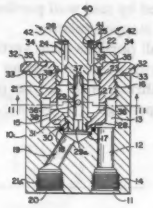
a second annular orifice for delivering a stream of atomizing air for mixing with said spray stream of atomized liquid material discharged from the spray stream discharge port, said second annular orifice defined by a portion of the downstream end of the spray stream nozzle extension and said air cap body orifice.

4,343,434

AIR EFFICIENT ATOMIZING SPRAY NOZZLE

James Haruch, Clarendon Hills, Ill., assignor to Spraying Systems Company, Wheaton, Ill.

Filed Apr. 28, 1980, Ser. No. 144,642
Int. Cl.³ B05B 7/10
U.S. Cl. 239—390 5 Claims



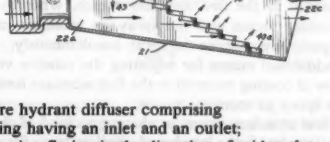
1. An atomizing spray nozzle including a nozzle body having an entrance opening for liquid and an entrance opening for air and an orifice passage, said passage being elongated, a liquid whirl chamber in the nozzle body in communication with said liquid entrance opening located behind said orifice passage of greater diameter than such passage and of less axial extent than the passage, a tangential inlet admitting liquid to the whirl chamber from said entrance opening, a central air stem containing an air chamber mounted in the nozzle and extending into the whirl chamber, a plurality of laterally directed openings in the air stem admitting air from said air chamber, said openings being disposed to discharge air into the whirl chamber at positions axially spaced from said inlet, said air stem having an extension into said elongated orifice passage, a restriction on said extension within said passage to form a constriction in the passage and cause a depressurization and sudden expansion of the liquid and air mixture, and means for varying the spray angle of the nozzle discharge comprising an interchangeable stem having a deflection cap including a deflection surface having a fixed angularity to the axis of said stem, said deflection cap disposed outwardly of the orifice passage with said deflection surface in spaced relation to the orifice such as to define an annular emission opening effecting the spray angle of the nozzle discharge.

4,343,435

FIRE HYDRANT DIFFUSER

Ronald V. Anderton, 5450 Balsam La., Plymouth, Minn. 55442, and Donald S. Atwood, 11656 Mississippi Dr., Champlin, Minn. 55316

Filed Nov. 13, 1980, Ser. No. 206,478
Int. Cl.³ B05B 1/26
U.S. Cl. 239—499 5 Claims



1. A fire hydrant diffuser comprising

a housing having an inlet and an outlet;

said housing flaring in the direction of said outlet;

a pair of screen members being disposed within said housing

in opposed relation extending transversely of said housing and being secured thereto;

said screen members being angled relative to each other and coverging at a point spaced from said inlet;

said screen members being formed as an expanded mesh;

the openings of said mesh being defined by interconnected wall portions of said screen members;

corresponding wall portions of said screen members being disposed in planes at right angles to the direction of water passing through said housing and corresponding of successive of said wall portions in the direction of the outlet of said housing being in outward stepped relation and said openings formed by said wall portions being disposed in a corresponding stepped relation

whereby, said wall portions form vertical barriers receiving directly the thrust of water passing through said housing blunting said thrust prior to the passage of said water through said openings.

4,343,436

METHOD AND APPARATUS FOR THE SPRAY-COATING OF THE INSIDE OF TUBULAR BODIES HAVING A SEAM

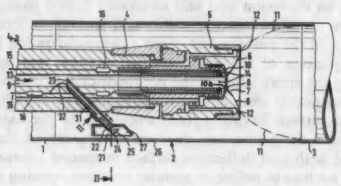
Ernst Lehmann, St. Gallen, Switzerland, assignor to Gema AG Apparatebau, Switzerland

Filed Apr. 4, 1980, Ser. No. 137,395

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914960

Int. Cl.³ B05C *7/02*

U.S. Cl. 239—696 **26 Claims**



1. An apparatus for spray coating the interior of a hollow body, comprising:

first atomizer means for atomizing a coating material for producing a cloud of the coating material inside the interior of the hollow body for coating the body interior with the coating material;

feed conduit means for transporting the coating material to the first atomizer means for atomization;

spray jet atomizer means for aiming a spray of coating material at a selected region of the interior of the hollow body for spray coating the selected region with a layer of the coating material; and

means for feeding coating material to the spray jet atomizer means simultaneously with the transportation of coating material to the first atomizer means, whereby the first atomizer means and the spray jet atomizer means can respectively atomize the spray simultaneously;

and additional means for adjusting the relative volumes of flow of coating material to the first atomizer means and to the spray jet atomizer means;

said first atomizer means producing a cloud of the coating material inside the interior of a hollow body for uniformly coating the body interior with the coating material.

4,343,437

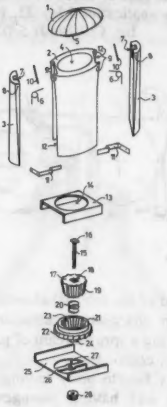
CONDIMENT GRINDER

John C. Czelen, 3411 30th St., NW., Washington, D.C. 20008

Filed Oct. 22, 1979, Ser. No. 85,190

Int. Cl.³ A47J *42/04*

U.S. Cl. 241—169.1 **5 Claims**



1. A condiment grinder, adapted for one-hand operaton, comprising a hollow reservoir, having a central axis, an upper end, and an open lower end, a grinding mechanism mounted in said reservoir adjacent to said open lower end, said grinding mechanism including a grinding wheel with internal grinding surfaces and a grinding hub with external grinding surfaces, interfitting and cooperating with said internal grinding surfaces to grind the condiment therebetween upon relative movement of said hub and grinding wheel, said relative movement being achieved by means of a ratchet mechanism consisting of at least one ratchet arm, reciprocable in a direction transverse to said axis, one end of said arm engaging either said hub or said grinding wheel, the other end of said ratchet arm engaging a compression arm, movement of said compression arm causing said ratchet arm to move in a direction transverse to said central axis, and thus causing relative motion between said hub and said grinding wheel.

4,343,438

RING HAMMER

Anthony W. Slikas, Birmingham, Ala., and Joseph P. Nigro, Villanova, Pa., assignors to Pennsylvania Crusher Corporation, Broomall, Pa.

Filed Apr. 1, 1980, Ser. No. 136,216

Int. Cl.³ B02C *13/28*

U.S. Cl. 241—196 **12 Claims**

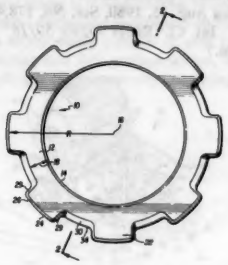
1. A ring hammer for a material reducing apparatus, comprising:

a substantially circular body having a central bore with an axis, said circular body having an axial length and a radial thickness;

a plurality of teeth projecting radially outwardly from said circular body, each of said teeth having at least one contact surface extending partially circumferentially around said circular body at least at the radially outermost portion of the tooth and being substantially parallel to said axis, each of said teeth also tapering radially inwardly from said contact surface toward the axial ends of said hammer; and

a plurality of connecting segments extending circumferentially between and interconnecting adjacent ones of said

teeth, each of said connecting segments tapering radially inwardly toward the axial ends of said hammer, at an



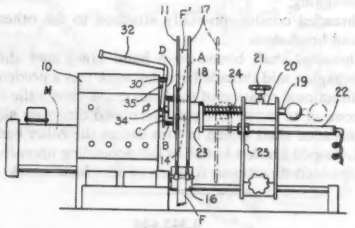
angle greater than the angle at which said teeth taper from said contact surface.

4,343,439

NARROW FABRIC BLOCKER

Kenneth M. Cavanagh, Warwick, R.I., assignor to Marshall & Williams Company, Providence, R.I.

Filed Oct. 15, 1980, Ser. No. 197,249
Int. Cl.³ B65H *67/02, 75/00*
U.S. Cl. 242—41 **2 Claims**



1. A blocker for narrow fabric and the like having a stationary frame carrying a hub carried flange on a motor driven shaft opposite an axially shiftable flange movable into and out of package positioning relation to said hub carried flange comprising:

an ejector plate carried by said flange about said hub;

circumferentially spaced means extending through said flange connected to said ejector plate;

operator means carried by said circumferentially spaced means; and

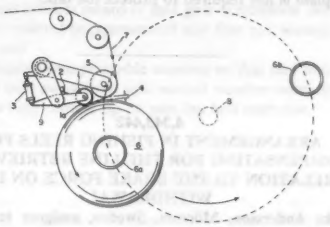
a yoke pivotally mounted on said stationary frame movable into operating relation to said operator means for urging said ejector plate, through said operator means and said circumferentially spaced means, away from said flange and for engaging and ejecting a block of narrow fabric packaged on said hub.

4,343,440

ADDITIONAL DEVICE FOR ROLLING INSTALLATIONS AND PROCEDURES FOR ROLLING OF PRESSURE-SENSITIVE MATERIALS

Rupert Engl, Bergisch Gladbach, Fed. Rep. of Germany, assignor to Zanders Feinpapiere AG, Bergisch Gladbach, Fed. Rep. of Germany

Filed Sep. 4, 1980, Ser. No. 184,016
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1979, 2935743
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—67.1 R **10 Claims**



1. An auxiliary winding control device for use with an apparatus for winding web-like material up to form a roll, said apparatus having a web contacting roller, said auxiliary device comprising:

another web contacting roller having a soft surface;

pivoted lever means for displaceably supporting said other roller for rotation;

means connected to said lever means for urging said other roller with a predetermined pressure against said wind-up roll;

means for varying the relative distance between said wind-up roll on the one hand and the first-mentioned roller and the pivot of said lever means on the other hand; and

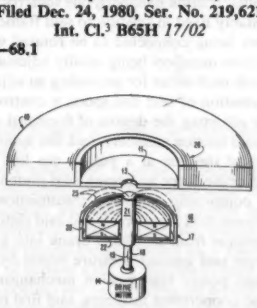
contact means linked to said lever means and responsive to the displacement of said other rollers by said wind-up roll incident to the winding operation, for controlling said distance-varying means so as to maintain a predetermined gap between said first-mentioned roller and said wind-up roll.

4,343,441

MAGNETIC TAPE REEL CLAMP WITH EXTENDED CENTER POLE

Scot M. Graham, Emsworth, England, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,621
Int. Cl.³ B65H *17/02*
U.S. Cl. 242—68.1 **2 Claims**



1. An arrangement for releaseably clamping a reel of magnetic tape to a driving motor comprising a magnetic clamp having a doughnut-shaped magnet and magnet holder mounted for rotation with said motor, said magnet holder

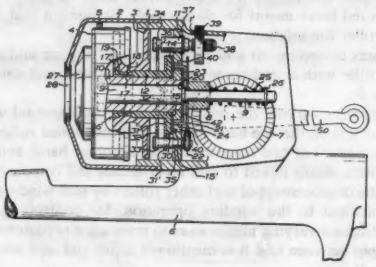
having a center pole which is disposed coaxially with said motor shaft for receiving said doughnut-shaped magnet and extending a predetermined distance above the surface of said magnet, said magnetic clamp further including a circular metal plate attached to the hub portion of said reel and adapted to engage said magnet holder, said magnet being polarized in an axial direction to provide a flux field which extends from said center pole to the circumferentially disposed edge portion of said magnet holder when no reel is disposed on said clamp, said center pole being extended to a point where the strength of the magnetic field is insufficient to adversely affect the magnetic condition of said magnetic tape and the shunting effect of said metal plate is not required to protect the tape.

4,343,442

ARRANGEMENT IN FISHING REELS FOR COMPENSATING FOR THE LINE RETRIEVAL IN RELATION TO THE BRAKE FORCE ON LINE WITHDRAWAL

Jan-Ake Andersson, Mörrum, Sweden, assignor to Abu Aktiebolag, Sweden

Filed Aug. 1, 1980, Ser. No. 174,473
Claims priority, application Sweden, Aug. 10, 1979, 7906702
Int. Cl.[3] A01K *89/01, 89/02*
U.S. Cl. 242—84.2 A **7 Claims**



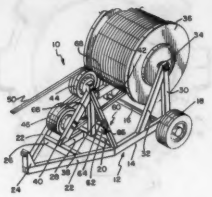
1. In a fishing reel having a frame, a line spool rotatably supported by said frame, a hand crank, transmission means and line retrieval means connected to and rotated by said hand crank via said transmission means for retrieval of the line and winding it onto the line spool, and a sliding clutch comprising coaxially mounted friction members, one such friction member being non-rotatably fixed in relation to said frame and another friction member being connected to be rotated with said line spool, said friction members being axially adjustable into friction contact with each other for providing an adjustable brake force against rotation of said line spool, a control mechanism (32, 37–39) for adjusting the degree of frictional contact pressure between said friction members, said line spool being rotatable by means of the line at a pull in the line sufficient to overcome said brake force and bring said clutch to slide, the improvement comprising a power transmission mechanism connected between said hand crank and said sliding clutch for converting a torque from said hand crank into a force which tends to increase said contact pressure preset by said control mechanism, said power transmission mechanism comprising first and second cooperating members, said first member being rotatable and connected to be acted upon by said torque from said hand crank and said second member being movable by torque from said first member and connected to said clutch to press said friction members together with a force depending on said torque.

4,343,443

WIRING APPARATUS

Thomas M. Grounds, Wichita, Kans., assignor to C & T Line Construction, Inc., Wichita, Kans.

Filed Aug. 15, 1980, Ser. No. 178,498
Int. Cl.[3] B65H *75/40, 59/16*
U.S. Cl. 242—86.7 **9 Claims**



1. An apparatus for installing under tension electrical conductor or cable comprising:

a frame;

wheels supporting said frame and rotatable thereon;

an electrical cable or conductor reel rotatably attached to said frame;

guide means connected to said frame for guiding said electrical conductor or cable as it leaves said reel;

a lower and upper bull wheel, both rotatably attached to said frame and positioned such as to have said electrical conductor or cable traverse an essentially S-shaped course with respect to a vertical plane as same passes over and around said lower and upper wheels;

brake means connected to said frame and operatively communicating with said lower and upper bull wheel to maintain tension on said conductor or cable as it traverses said S-shaped course;

an adjustable tension swagger roller means attached to said frame and positioned between said guide means and said lower bull wheel;

said adjustable tension swagger roller means comprises an L-shaped bracket pivotally attached to said frame including a tension roller rotatably connected to one end thereof for engaging said electrical conductor or cable to prevent swagging;

a threaded conduit pivotally attached to the other end of said bracket;

a threaded shaft bound to a hand crank and threadably engaging said threaded conduit such that a predetermined directional rotation of the hand crank causes the threaded conduit to move in a predetermined direction along said threaded shaft which in turn causes the roller end of said L-shaped bracket to rise or fall depending upon the predetermined directional rotation of said hand crank.

4,343,444

TILT COMPENSATING PENDULUM FOR SEAT MOUNTED RETRACTOR

Philip L. Francis, Bloomfield Hills, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

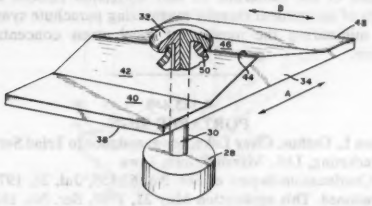
Filed Oct. 3, 1980, Ser. No. 193,688
Int. Cl.[3] A62B *35/02;* **B65H** *75/48*
U.S. Cl. 242—107.4 A **9 Claims**

7. In a seat belt retractor for installation in a vehicle, said retractor comprising a frame, locking means on said frame operable to lock said retractor and an inertia sensor for actuating said locking means, said inertia sensor comprising a weighted mass extending by an elongated stem from a cap member and a support member for supporting said cap member, said support member having an opening through which said stem extends, the improvement comprising:

first surface means on said support member in contact with said cap member, said first surface means preventing motion of said cap member in directions substantially

normal to the longitudinal axis of said vehicle in response to a deceleration force below a predetermined value; and

second surface means normally spaced from said cap member when said frame is in a horizontal position, said second surface means comprising an inclined surface extending in a direction substantially parallel to said longitudinal axis and intersecting said first surface means, said second surface means being effective to restrict tilting motion of said



cap member in a direction substantially parallel to said longitudinal axis to a predetermined degree without imparting a lifting force to said cap member, said second surface means being effective to permit tilting motion of said cap member in said direction substantially parallel to said longitudinal axis at the occurrence of a deceleration of said vehicle in said direction above said predetermined value.

4,343,445

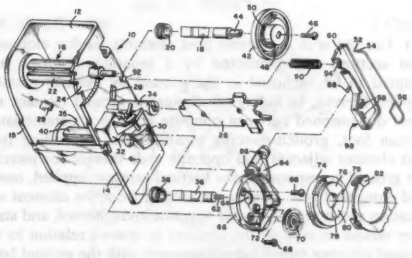
DUAL SPOOL SEAT BELT RETRACTOR WITH COMFORT FEATURE

Klaus F. Ocker, Fraser; Richard J. Jodts, Mt. Clemens, and Robert C. Pfeiffer, Sterling Heights, all of Mich., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Oct. 29, 1979, Ser. No. 89,648

Int. Cl.³ A62B *35/02*; B65H *75/48*

U.S. Cl. 242—107.7 **8 Claims**



1. In a dual spool seat belt retractor including a housing, a lap belt retractor mounted in said housing and adapted to store a lap belt thereon, said lap belt retractor having a shaft, a shoulder belt retractor mounted in said housing and adapted to store a shoulder belt thereon, said retractors being rotatable in rewind and extraction directions, and rewind means associated with said retractors and normally exerting a rewind force urging said retractors towards the rewind direction, the improvement comprising:

tension relieving means operatively associated with said shoulder belt retractor and effective in an operable position to relieve the rewind force associated with said shoulder belt retractor and ineffective in an inoperable position to relieve said force; and

release means operable to position said tension relieving means in its inoperable position, said release means comprising a gear mechanism coupled to said shaft for actuating said release means in response to rotation of said lap belt retractor in said rewind direction and being actuatable to position said tension relieving means in its operable position in response to rotation of said lap belt retractor in said extraction direction, said gear mechanism including contact means for positioning said tension relieving means in its operable and inoperable positions,

said tension relieving means including first and second members, said second member being coupled to said shoulder belt retractor, said first member adapted to engage said second member to effect said relief of said rewind force, and a pivotable member in contact with said first member and said contact means of said gear mechanism and effective to control engagement of said first and second members, and

means biasing said pivotable member so that said first member is held away from said second member when said lap belt is fully wound up on said lap belt retractor.

4,343,446

V/STOL AIRCRAFT

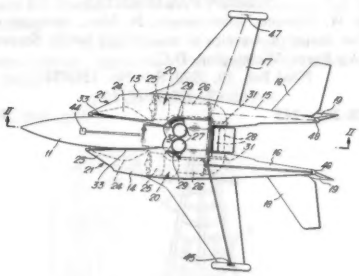
Kenneth R. Langley, Wotton-Under-Edge, England, assignor to Rolls Royce Limited, London, England

Filed Apr. 29, 1980, Ser. No. 144,937

Claims priority, application United Kingdom, May 29, 1979, 7918674

Int. Cl.³ B64C *29/00, 15/00*

U.S. Cl. 244—12.5 **20 Claims**



1. An aircraft capable of vertical or short take-off and landing comprising:

a rearwardly bifurcated fuselage comprising a front nose portion extending along the longitudinal center-line axis of the aircraft and two spaced engine nacelles which extend rearwardly to comprise two spaced tail booms:

a gas turbine engine located within each nacelle;

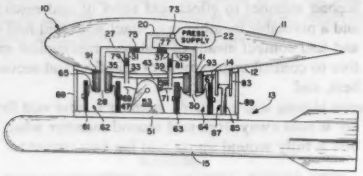
a plurality of turbine exhaust nozzles located to the rear of the nose portion and between the tail booms, said plurality of turbine exhaust nozzles are located in close proximity to the longitudinal center-line of said aircraft, and an efflux of gases from said gas turbines is discharged through said plurality of turbine nozzles to provide a propulsive thrust; and

means to vary the direction of the thrust.

4,343,447
DECOUPLER PYLON: WING/STORE FLUTTER SUPPRESSOR

Wilmer H. Reed, III, Hampton, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 28, 1980, Ser. No. 135,057
Int. Cl.³ B64D *1/00, 9/00*
U.S. Cl. 244—137 R **12 Claims**

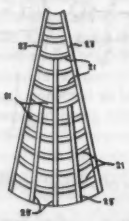


1. A device for suspending a store from a support, comprising:
- an airfoil lifting surface subjected to flutter;
- store means;
- means for suspending said store means from said airfoil lifting surface and enabling movement thereabout;
- soft-spring means connected between said airfoil lifting surface and said store means; and
- control means actuated by movement of said soft-spring means;
- said soft-spring means and control means maintaining alignment of said store means about a spanwise axis of the lifting surface and isolating the pitch modes of the store means from the torsion modes of the airfoil lifting surface alleviating airfoil lifting surface flutter and vibratory loads.

4,343,448
ALL RADIAL CONSTRUCTION FOR CONTINUOUS RIBBON PARACHUTES

Donald W. Johnson, Albuquerque, N. Mex., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,074
Int. Cl.³ B64D *17/10*
U.S. Cl. 244—145 **1 Claim**



1. A continuous ribbon parachute comprising a canopy having a plurality of continuous horizontal ribbons, each of said ribbons being represented by circles, the center of each of said circles being the center of said parachute, said ribbons being of gradually decreasing diameter from the base of said parachute to the center of said parachute, a plurality of adjacent tapes each fully extending radially between said base and said center of said parachute and wherein each pair of said adjacent radially extending tapes define therebetween a substantially triangular-shaped gore thereby forming a plurality of gores within said parachute, three equally spaced adjacent mini-tapes within each of said gores, each of said three mini-tapes extending radially part way between said base and said center of said parachute, a central mini-tape of said three adjacent mini-tapes extending farther upward toward said center of said parachute than the other two adjacent mini-tapes, and said ribbons being fixedly secured at a plurality of points thereon to said radially extending tapes and said radially extending mini-tapes such that the centerlines of said radially extending tapes and said radially extending mini-tapes are perpendicular to the tangent of the centerline of said horizontal ribbons at said points of securement thereby maximizing parachute symmetry and minimizing the number of local stress concentrations therein.

4,343,449
PORTABLE SIGN

Ramon L. Osthus, Clear Lake, Iowa, assignor to Triad Service & Marketing, Ltd., Marshalltown, Iowa

Continuation-in-part of Ser. No. 62,155, Jul. 26, 1979, abandoned. This application May 21, 1980, Ser. No. 152,147
Int. Cl.³ A45F *3/44;* **A16M** *13/00*
U.S. Cl. 248—156 **4 Claims**

1. For use with a portable post assembly having elongated post sections interconnected by a separable joint, a base adapted to be anchored in the ground by vertical pressure applied thereto, including an elongated ground contact element dimensioned between opposite ends to accommodate a human foot, ground-piercing means means depending from said element adjacent said opposite ends thereof for piercing the ground in response to the vertical pressure applied, one of said elongated post sections projecting from the element at a location closer to one of said opposite ends thereof, and stabilizer means secured to the element in spaced relation to the ground piercing means for engagement with the ground laterally of the element, said stabilizer means comprising an elongated member pivotally and adjustably attached to said element and having a ground level surface portion generally perpendicular to said one of the post sections and a depending leg adapted to be embedded in the ground, said ground-piercing means comprising a pair of blades with opposed tapers.

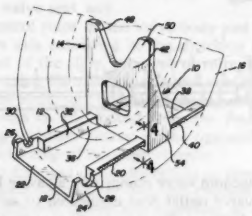
4,343,450
PLATE HOLDER

George C. Anderson, Mount Prospect, Ill., assignor to Altra Corporation, Elk Grove Village, Ill.

Filed Dec. 10, 1979, Ser. No. 102,239
Int. Cl.³ A47G *1/24*
U.S. Cl. 248—454 **5 Claims**

1. A plate holder for holding a plate in a substantially vertical attitude for displaying the plate comprising; a base, said base having a rim catch for holding a rim of the plate, said base

having a track connected to the rim catch with a plurality of serrations on the track; and a support movably mounted on the base and being substantially perpendicular to the base, said support having a plate panel adapted for engaging the plate having its rim in the rim catch to hold the plate in a substantially vertical attitude, and a tooth connected to said plate panel and engageable with the serrations of the track for releasably holding the support in a selected position relative to the



base for holding the plate in a selected attitude, the track including an elongated ear, said ear having the serrations on its lower side, the support including an upper wall slidably engaging the ear on its upper surface, the tooth fixedly connected to the upper wall and being spaced from the upper wall sufficiently to allow the upper wall to slide on the upper surface of the ear when the upper wall is substantially parallel to the ear and the tooth to engage lockably the serrations when the upper wall is not parallel to the upper surface of the ear.

4,343,451

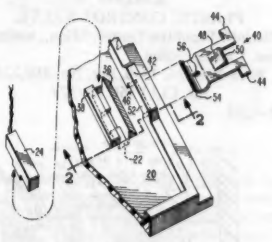
SENSOR RETAINING SYSTEM

John L. Armstrong, Detroit, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 5, 1979, Ser. No. 100,500

Int. Cl.³ H05K *5/00*

U.S. Cl. 248—500 **3 Claims**



1. A sensor retaining system comprising:

a base member having a recess for receiving the sensor;

said base member having a fulcrum portion positioned adjacent the recess along a front portion of the base member, said fulcrum portion having a slot formed therethrough;

said base member having a rear support wall and an intermediate support wall extending upward along the recess, said intermediate wall having an inclined ramp portion; and

spring clip means for passing through the slot in the fulcrum portion and retaining the sensor within the recess;

said spring clip means having an end formed into a curved follower for engaging the inclined ramp portion and traveling along the ramp and up onto the sensor thereby flexing said spring clip means.

4,343,452

SPRING SUPPORT STRUT FOR DRUM-TYPE WASHING MACHINE

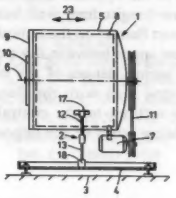
Fritz Bauer, Altdorf, Fed. Rep. of Germany, assignor to Suspa Federungstechnik Fritz Bauer & Shone Ohg, Altdorf, Fed. Rep. of Germany

Filed Aug. 14, 1979, Ser. No. 66,454

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837801

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—565 **11 Claims**



1. An elastic support structure for a washing machine which includes a housing and a horizontally rotating drum, said support structure including a base and at least two spring support struts each attached resiliently to said base at the lower end thereof and to said housing at the upper end thereof, said spring support struts each including an upper guide rod and a lower guide rod, each of which is surrounded by a compression spring extending substantially the entire length of said guide rod, a centrally disposed guiding and damping casing for said upper and lower guide rods defining guide passages in which said upper and lower guide rods move axially and including means for providing frictional resistance between the walls of said passages and said guide rods, one end of each of said compression springs being supported by said casing.

4,343,453

MOULD FOR PRODUCING CONCRETE MOULDINGS

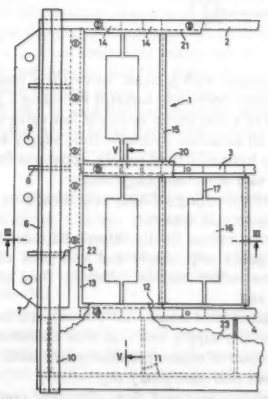
Guenter Rodon, Erbach, Fed. Rep. of Germany, assignor to Rampf KG Formen GmbH & Co., Allmendingen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 166,340

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012817

Int. Cl.³ B28B *1/14, 7/16*

U.S. Cl. 249—120 **6 Claims**



1. A mold for producing concrete moldings comprising a frame insertable into a molding machine and a plurality of

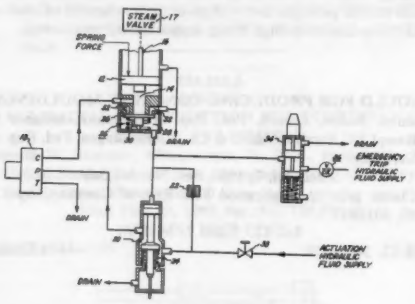
individual molding boxes mounted in said frame, said frame having a longitudinally extending central wall and said molding boxes being arranged in said frame in two parallel rows on opposite sides of said central wall, the interiors of said molding boxes containing a molding core corresponding to the moldings to be formed, each of said molding boxes having a pair of opposed longitudinal walls and a pair of opposed transverse walls joined together to form the outer walls of said molding box surrounding the mold core, said molding boxes each having at least two support flanges joined to and extending outwardly from each of the opposed longitudinal walls, the support flanges on one longitudinal wall being positioned with respect to the support flanges on the opposite longitudinal wall to provide sufficient space between the support flanges of the molding boxes to permit flanges of the molding boxes to be secured to the central wall with the flanges of the molding boxes in one row secured to the central wall between the flanges of the molding boxes of the opposed row of molding boxes.

4,343,454

APPARATUS FOR INDIVIDUAL ISOLATION OF HYDRAULICALLY ACTUATED VALVES

Jens Kure-Jensen, and Patrick S. Coppola, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1980, Ser. No. 163,332
Int. Cl.³ F15B *13/043;* F16K *31/124*
U.S. Cl. 251—26 **12 Claims**



1. In combination with a steam valve for a steam turbine, said valve having a hydraulic actuator including a pilot chamber for control of a disc dump valve for fast valve closure and operable from an actuation hydraulic fluid supply and from an emergency trip hydraulic fluid supply, apparatus for hydraulically isolating said actuator, comprising:

valve means for shutting off hydraulic flow from said actuation supply to said actuator;

flow restriction means fluidly interposed directly between said emergency trip supply and said pilot chamber for limiting the inflow rate of hydraulic fluid to said pilot chamber; and

flow direction control means fluidly interposed between said emergency trip supply and said pilot chamber, said flow direction control means permitting hydraulic fluid flow only toward said emergency trip supply;

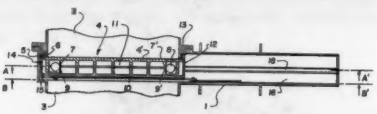
said valve means and said flow direction control means being operative to isolate said actuator from said actuation supply and said emergency trip supply upon closure of said valve means.

4,343,455

HIGH VACUUM VALVE CONSTRUCTION

Otto Winkler, Balzers, Liechtenstein, assignor to Balzers Aktiengesellschaft für Hochvakuumtechnik und Dünne Schichten, Liechtenstein

Filed Feb. 21, 1980, Ser. No. 123,399
Claims priority, application Switzerland, Feb. 26, 1979, 1858/79
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—58 **5 Claims**



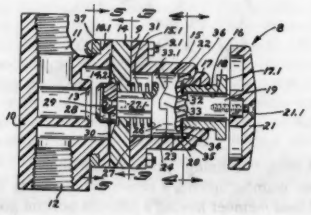
1. A high-vacuum valve comprising a casing having a valve inlet port, a valve outlet port connected to said inlet port, a valve seat including a flange extending at least partly thereabout, said seat defined in said casing between said valve inlet port and said valve outlet port, said casing also defining a valve movement passageway adjacent said valve seat, a valve member movable in said housing on said passageway between a position in which said valve member is aligned with said valve seat for closing the valve to a position in which said valve member is out of alignment with said valve seat for opening said valve, said valve member including at least two separate relatively movable plate parts both of which move along said passageway and one of which is movable relative to the other when said valve member is aligned with said valve seat and into firm engagement with said seat, and drive force transmission means acting between said plate parts to move at least one relatively to the other in a direction to place it against said seat, the other of said plate parts being braced by said casing passageway, a channel section member connected to said housing and engaged over a part of said flange, and with said valve member in its aligned position, engaged with said other of said plate parts, said other of said plate parts including a support element engaged over said flange in its aligned position.

4,343,456

PLASTIC CONTROL VALVE

Wayne D. Zitzloff, Brooklyn Center, Minn., assignor to Galtek Corporation, Chaska, Minn.

Filed May 16, 1980, Ser. No. 150,326
Int. Cl.³ F16K *31/524*
U.S. Cl. 251—255 **3 Claims**



1. A control valve for flowing fluids, comprising

a plastic valve body having a flow passage for flowing fluids and including a valve seat, the valve body having an access opening opposite the valve seat,

a plastic valve element movable toward and away from the valve seat, the valve element having a flexible sealing diaphragm thereon around the periphery thereof, the diaphragm and valve element traversing the access opening and the outer edge of the diaphragm being entirely

sealed against the valve body to isolate the access opening at one side of the diaphragm from the fluids adjacent the valve seat at the other side of the diaphragm, the diaphragm flexing to accommodate movement of the valve element toward and away from the valve seat,

a plastic operating slide extending through the access opening and having an inner end connected to the valve element and also having an outer end with an end face, the slide being slidably movable endways through the access opening for moving the valve element toward and away from the valve seat, and

a plastic control rotor on the valve body and turning about a rotation axis extending in the direction of the sliding movement of the slide, the control rotor having an end face traversing the rotation axis and confronting the end face of the slide, said end faces having cooperating cam and follower means spaced from the rotation axis and producing endways sliding of the operating slide in response to turning of the control rotor,

the cam and follower means including an elongate ramp on one end face and spaced from the rotation axis and said cam and follower means also including an engaging part bearing against the ramp, the elongate ramp and engaging part being relatively rotatable in response to turning of the rotor to produce endways sliding of the slide and movement of the valve element, and the control rotor having an annular shoulder facing away from the slide,

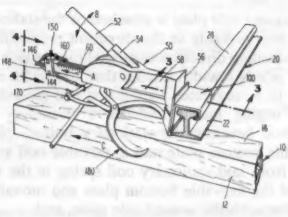
and an adjustment nut threaded into the valve body, the nut embracing the rotor and bearing against the annular shoulder of the control rotor for accurately positioning the rotor, slide and valve element relative to the valve seat.

4,343,457

RAIL JACK ADAPTOR

James C. Siano, 53 E. Baltimore Pike, Second Flr., Clifton Heights, Pa. 19018

Filed Oct. 10, 1980, Ser. No. 196,116
Int. Cl.³ E01B *29/22*
U.S. Cl. 254—43 **10 Claims**



1. A rail jack adapter for use with a rail jack having a base for supporting said jack, a generally upright body extending away from said base, a rack longitudinally movable with respect to said body, at least the head of which rack is extensible beyond the top end of said body, and a pivoted jack handle extending generally away from said body for moving said rack with respect to said body, said adapter facilitating the use of said rail jack to pull railroad ties, said adapter comprising:

(a) rail bracket means connectable to a railroad rail for receiving said base of said jack to position said jack parallel to, over and substantially above a tie to be pulled; and for positioning said pivoted jack handle to extend generally vertically away from said tie;

(b) a jack cap connectable to said rack head;

(c) tie gripping means for selectively gripping a tie to be pulled said tie gripping means comprising tong means for engaging opposite outer surfaces of said tie, and force conversion means for converting at least a portion of the substantially linear tie pulling force applied through said chain means into opposing gripping forces applied to said tie surfaces through said tong means, said tie gripping means comprising pivotally connected tongs having transversely disposed handles thereon, and a yoke around said tongs, said yoke comprising a "C" bar for engaging said tongs and a tie rod bridging said "C" bar, said tie rod being connected to said chain means; and

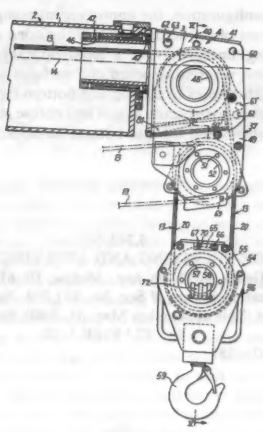
(d) chain means connected to said tie gripping means and selectively connectable along its length to said jack cap for interconnecting said jack rack with said tie gripping means, whereby pivotal movement of said jack handle will cause relative movement of said tie with respect to said base.

4,343,458

SUPPORTS OF BOOM END SHEAVES OR SIMILAR FOR A LIFTING AND/OR HANDLING MACHINE

Francois Simon, Rte. d'Annecy, 73410 Albens, France

Filed May 16, 1980, Ser. No. 150,636
Claims priority, application France, May 18, 1979, 79 12687
Int. Cl.³ B66D *3/08*
U.S. Cl. 254—399 **6 Claims**



1. A support for boom end sheaves for lifting and/or handling machines comprising a boom having a free end, a support member attached to said free end, a first sheave attached to said support member, said first sheave having an axis transverse to the longitudinal direction of said boom, a first pulley block comprising pulleys having an axis parallel to that of said first sheave, a lever articularly connected at one end to said first sheave and carrying said first pulley block at its other end, a lifting cable running along said boom, passing on said first sheave and then to said first pulley-block, said pulley axis of said first pulley block being fixed with respect to said lever.

4,343,459

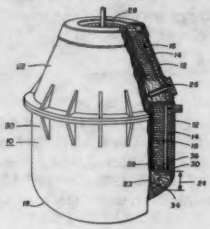
BASIC OXYGEN FURNACE CONSTRUCTION

Loren L. Kimmel, Chicago Heights, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 8, 1980, Ser. No. 184,824
Int. Cl.³ C21C *5/42*
U.S. Cl. 266—243 **2 Claims**

1. In an oxygen converter vessel, comprising a metal shell having a mouth at its top, a shell protective lining in contact with the inside surface thereof, and a working lining, said vessel constructed of three major zones, the bottom zone, the barrel zone, and the cone section zone, the three zones containing refractory brick having generally face, side and end surfaces, an end surface of each brick in these zones in the working lining being exposed to the interior of said vessel, the

bottom zone being generally dish-shaped and of upwardly opening concave configuration, the brick in said zone terminating in a knuckle area with their face surfaces inclined from the vertical axis of the vessel, the barrel zone extending from the knuckle area upwardly to the cone section zone, the cone section zone being of downwardly opening truncated cross-



sectional configuration, the improvement comprising a plurality of courses of refractory brick in the cone section zone, at the working lining, having a parallelogram cross-sectional configuration wherein opposed end surfaces of the shape are inclined with respect to the top and bottom surfaces and there are a pair of opposed acute angles and obtuse angles formed by the end surfaces and top and bottom surfaces.

4,343,460

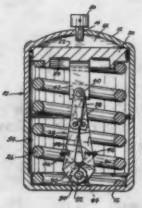
FORCE-RECEIVING AND APPLYING DEVICE

Joseph J. Gende, 4311 7th Ave., Moline, Ill. 61265

Continuation-in-part of Ser. No. 961,804, Nov. 17, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 136,184

Int. Cl.³ F16F *3/10*

U.S. Cl. 267—151 16 Claims



1. A force-receiving and -applying device, having a hollow cylinder having a first end including an opening and a second end including an abutment; a pixton axially reciprocable within the cylinder and having a front face adapted to receive and to apply force via said opening; a first coil spring coaxially disposed within the cylinder between the back of the piston and the abutment and biased to urge the piston toward the first end of the cylinder; and secondary biasing means operative on the piston in conjunction and simultaneously with the coil spring, and having such spring rate relative to that of the coil spring as to offset at least some of the forces of the coil spring, so that the coil spring and secondary biasing means together provide a substantially constant resistance to movement of the piston when force is received by the piston and to apply a substantially constant force to the piston when force is applied by the piston, characterized in that the secondary biasing means is disposed coaxially within the cylinder between the abutment and the back of the piston.

4,343,461

PAPER FEEDING CASSETTE

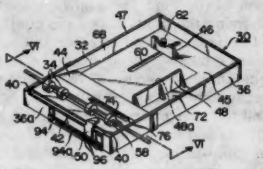
Kiyoshi Tomimori, and Shunichi Nakajima, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 17, 1979, Ser. No. 104,062

Claims priority, application Japan, Dec. 20, 1978, 53-157862; Dec. 20, 1978, 53-157863; Dec. 20, 1978, 53-157864; Dec. 20, 1978, 53-157867; Dec. 20, 1978, 53-157868

Int. Cl.³ B65H *3/30*

U.S. Cl. 271—22 11 Claims



1. In a paper feeding cassette for receiving paper piles of different widths, comprising a cassette body including a stationary bottom plate on which is disposed the rear portion of the paper pile with respect to the take-up direction of the paper, a movable bottom plate vertically movable relative to the stationary bottom plate in the cassette body and having the front portion of the paper pile disposed thereon, means for upwardly urging the movable bottom plate, a first side plate regulating one side edge of the paper pile, a second side plate regulating the other side edge of the paper pile, a front wall regulating the front edge of the paper pile, and separation means for enabling the uppermost paper alone of the paper pile to be fed; the improvement in which:

(1) the first side plate is a stationary side wall fixed to the stationary bottom plate,

(2) the movable bottom plate has a width not smaller than the width of the largest paper which can be housed in the cassette body,

(3) the second side plate is attached to the stationary bottom plate and movable in the direction perpendicular to the paper-feeding direction so as to allow the side edges of the paper pile of a width smaller than the width of the largest paper to be regulated by the first and second side plates,

(4) the urging means includes a stationary coil spring stretched between the stationary bottom plate and the movable bottom plate and a movable coil spring spaced apart from said stationary coil spring in the width direction of the movable bottom plate and movable sideways together with the second side plate, and

(5) the cassette further includes a rear upright plate movable back and forth relative to the stationary bottom plate for regulating the rear edge of the paper pile.

4,343,462

ROCKING AUXILIARY GRIPPER SYSTEM FOR SHEET PROCESSING MACHINES

Günter Weisbach, Radebeul, and Günter Lucius, Dresden, both of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Continuation-in-part of Ser. No. 135,625, Mar. 31, 1980, abandoned. This application May 19, 1980, Ser. No. 151,111

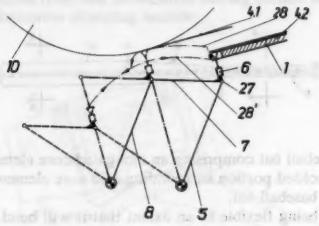
Claims priority, application German Democratic Rep., Apr. 2, 1979, 211940

Int. Cl.³ B65H *5/10, 5/14*

U.S. Cl. 271—267 3 Claims

1. An auxiliary gripper system for transferring sheets from a feed table to a feed cylinder of a sheet fed rotary press, comprising a parallel linkage arranged under the feed cylinder; a gripping mechanism secured to said linkage and including a

suction-type gripping element which is movable relative to the linkage between a lower position and a raised position; drive means for oscillating said linkage between a sheet takeover position in which the gripping element is below said feed table and the linkage reverses its motion, and a sheet transfer position in which the gripping element passes below a transfer



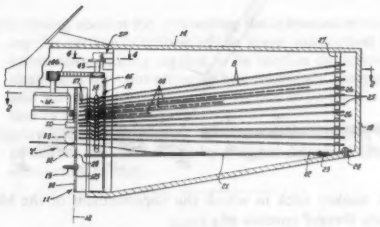
point of said feed cylinder at a speed synchronized with that of said transfer point; and means for displacing the gripping element relative to the linkage into its lower position when the linkage moves toward the sheet takeover position, and for lifting the gripping element relative to the linkage against said feed cylinder when the linkage moves from the takeover position to the sheet transfer position.

4,343,463

COMPACT SORTER

Frederick J. Lawrence, Tustin, Calif., assignor to Gradco/Dendoki, Inc., Santa Ana, Calif.

Filed Nov. 27, 1979, Ser. No. 98,191
Int. Cl.³ B65H *39/11*
U.S. Cl. 271—293 **17 Claims**



1. An improved sorting apparatus of the shiftable bin type including a frame structure having means for mounting the sorting apparatus at the sheet outlet from a copying machine, sorting bins shiftable relative to one another to provide a wide sheet entry between bins at said outlet, and means for shifting the bins, the improvement wherein said bins have ends remote from said outlet pivotally arranged and ends adjacent said outlet mounted for shifting movement past said outlet, and said means for shifting said bins engages successive bins at said ends adjacent to said outlet to move the latter successively from one side of said outlet to the other, spring means acting on said bins to bias said bins in at least one direction into engagement with said shifting means, and including control means to intermittently effect operation of said shifting means in opposite directions following passage of sheets into successive bins from the copying machine, means guiding said bins at said ends adjacent to said outlet for uniform movement past said outlet including portions of said bins engaged with one another to space said bins at opposite sides of said outlet.

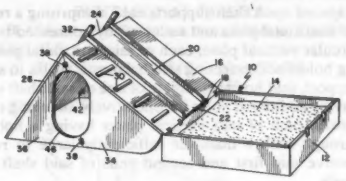
11. An improved sorting apparatus comprising: a frame structure; a plurality of bin members shiftably disposed in said frame structure; means for successively moving said bin members in said frame structure between first and second positions at which said bin members are at opposite sides of a sheet entry location and in closely spaced relation and for widely spacing successive bins at said entry location to receive a sheet at said entry location; said means for moving said bin members comprising supports at at least one of the opposite sides of said bin members in abutting relation with one another when said bin members are in said first and second positions; driven bin shifting means including a member engageable with successive supports to move said bins successively and oppositely from one side of said entry location to the other; and drive means to intermittently drive said bin shifting member in opposite directions.

4,343,464

PLAYGROUND SLIDE AND SHELTER

Curtis R. Dose, 2559 San Anselmo, San Diego, Calif. 92109

Filed Apr. 7, 1980, Ser. No. 138,114
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—56.5 R **7 Claims**



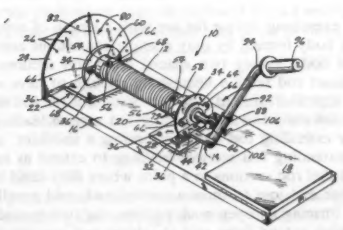
1. A playground structure, said structure comprising:
an open top container for containing a playing medium;
a substantially rigid cover panel having an inner edge and an outer edge and connected at said inner edge to said container for pivoting to a first position for covering said container and to a second position for opening said container for exposing the playing medium;
an elongated slide mounted on the inside of said cover panel and having an inner end at said inner edge and an outer end at said outer edge remote from said inner edge; and
support means pivotally connected to said cover panel at said outer edge for supporting said cover panel and said slide in an inclined position inclined toward said container for enabling sliding into said container when said cover is in said second position.

4,343,465

SPRING TYPE ARM WRESTLING DEVICE

Dan V. Allen, Rolfe, Iowa 50581

Filed Jul. 28, 1980, Ser. No. 173,040
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—67 **7 Claims**



1. An arm wrestling device for use in training for arm wrestling competition or for recreation, comprising:
a base support, having an upper surface and a pair of spaced apart shaft supports on said upper surface;
an elbow support on said upper surface adjacent one of said shaft supports;

an elongated shaft extending between and rotatably journaled within said shaft supports, said shaft having first and second opposite ends;

a lever arm operatively connected to said first end of said shaft and extending radially outwardly therefrom to terminate in a handle, said handle being located above said elbow support;

said lever arm and said shaft being pivotal about the longitudinal axis of said shaft from a first position wherein said handle is above said base to a second position wherein said handle is lowered to approximately the level of said base;

spring means interconnecting said shaft and said shaft supports for yieldably urging said lever arm and said shaft from said second to said first positions;

stop means engaging said lever arm for limiting the rotation of said lever arm beyond said first position in response to said spring means;

a pointer assembly operatively connected to said second end of said shaft;

a calibrated scale mounted on said base support adjacent said pointer assembly;

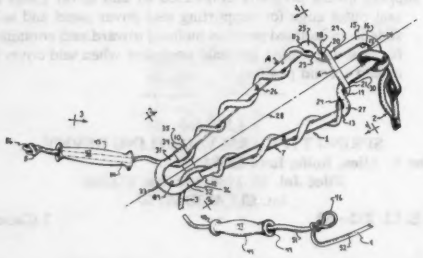
said spaced apart shaft supports each comprising a rectangular horizontal plate and an integrally connected truncated circular vertical plate, each of said horizontal plates having holes for connecting said horizontal plates to said base support, said horizontal plate of one of said shaft supports having additional holes for operatively attaching said stop means, each of said vertical plates having a hole therethrough with a diameter sufficiently large to rotatably receive said first and second ends of said shaft respectively.

4,343,466

FRICTIONAL RESISTANCE TYPE EXERCISER AND METHOD OF FORMING AN EXERCISING DEVICE

Roger C. Evans, 10214 Dogwood Ave., Palm Beach Gardens, Fla. 33410

Filed Nov. 15, 1979, Ser. No. 94,531
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—133 **4 Claims**



1. An exercising device for use with a length of rope comprising a body formed by only a single continuous contoured rod, said body having two spaced apart rod sections, each spaced apart rod section being long enough to have several turns of rope therearound, one end of each of the rod sections bending inwardly toward the other rod section, each of said inwardly extending rod sections forming a shoulder, said inwardly extending rod sections bending to extend as substantially parallel rod sections to a point where they bend toward each other and join to form a curved end, said parallel rod sections forming an open neck portion, the two spaced apart rod sections extend from said shoulders and are attached to form a second curved end, said two spaced apart rod sections taper towards each other as they extend from said shoulders, the bend between each inwardly extending rod section forming a shoulder and each parallel rod section forming the neck portion provides for a rope guide and bearing for guiding a length of rope from one spaced apart rod section to the other.

4,343,467

SHORT HITTING BASEBALL BAT

Nelson F. Newcomb, and Nelson F. Newcomb, Jr., both of Mirror Lake, N.H. 03853

Filed Jul. 10, 1980, Ser. No. 168,277
Int. Cl.³ A63B *59/40*
U.S. Cl. 273—26 B **6 Claims**

5. A baseball bat comprising an elongated core element and an outer molded portion surrounding said core element in the shape of a baseball bat,

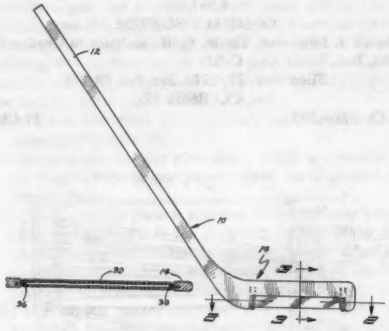
said bat being flexible to an extent that it will bend noticeably as it is waggled back and forth by a batsman.

4,343,468

HOCKEY STICK BLADE STRUCTURE

Wallace I. Lindgren, 4471 Ellerdale Rd., Minnetonka, Minn. 55343

Filed Aug. 18, 1980, Ser. No. 178,878
Int. Cl.³ A63B *59/14*
U.S. Cl. 273—67 A **10 Claims**



1. A hockey stick in which the improvement of the blade structure thereof consists of

a planar blade member,

said blade member having an open bottom open sided recess therein and having a top wall and end walls defining the extent of said recess,

an insert member disposed within said recess and forming the entire wall thereof to the full extent thereof to act as the entire striking member,

said insert member being sufficiently resilient to flex upon engagement with a hockey puck, and

means carried by said blade member removably securing said insert member within said recess.

4,343,469

GOLF GAME PRACTICING APPARATUS

Yoshisuke Kunita; Yoshikatsu Ishida, and Masaharu Kuwabara, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

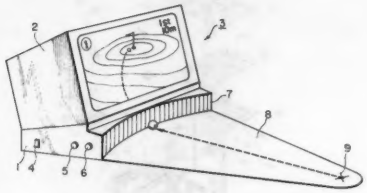
Filed May 6, 1980, Ser. No. 147,296
Claims priority, application Japan, May 7, 1979, 54-55567
Int. Cl.² A63B *69/36*; A63F *9/22*
U.S. Cl. 273—185 A **25 Claims**

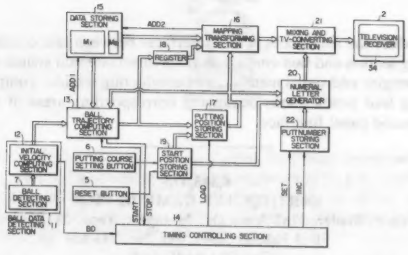
1. A golf game practicing apparatus having a putt mat provided with a putt position, comprising:

information storing section for memorizing information concerning surface condition of a "hole"-containing green;

ball information detecting section for detecting a velocity vector of the ball struck at said putt position;

ball trajectory computing section for computing a trajectory of the ball rolling on said green, based on respective informations from said information storing section and said ball information detecting section;





converting section for converting the information concerning the surface condition of the green memorized in said information storing section to be used in depiction of an image and for converting th ball trajectory computed by said ball trajectory computing section to be used in depiction of an image; and

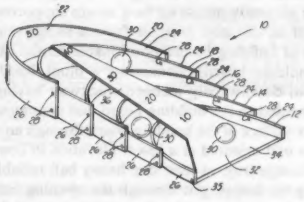
display unit for displaying movements of the ball on the green due to said putting by a signal delivered from said converting section.

4,343,470

BALL ROLLING GAME

Norman J. Grifhorst, 131 N. Hillside, Wichita, Kans. 67208

Filed Feb. 9, 1981, Ser. No. 233,008
Int. Cl.³ A63F *7/00*
U.S. Cl. 273—123 R **4 Claims**



1. A ball rolling game for the enjoyment of one or more players, the game comprising:

a ball;

a plurality of dividers, each of the dividers having side portions and a center portion, the dividers disposed in a vertical position and formed into a semi-circular shape with the ends of the side portions abutting against and attached to the side portions of each of the adjacent dividers, the center portion of each of the dividers disposed in a spaced relationship to the center portion of the adjacent one of the dividers a sufficient distance to receive the ball therebetween; and

an elongated ramp, the ramp having a wedge-shaped launch pad and an elongated neck integrally attached to the launch pad, the launch pad extending the width of the forward most semi-circular divider and attached thereto, the neck of the ramp received on a portion of the top of the center portion of all but the rearwardmost the dividers and centered thereon;

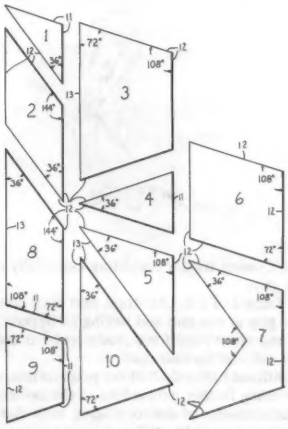
the ball adapted to be rolled onto the launch pad of the ramp and upwardly along the neck of the ramp until the ball falls off the side or the end of the ramp where it is to be received between the center portions of two adjacent ones of the dividers.

4,343,471

PENTAGONAL PUZZLE

Murray B. Calvert, 745 Rowntree Ave., London, Ontario, Canada (N6C 2L9)

Filed Jun. 22, 1981, Ser. No. 275,603
Int. Cl.³ A63F *9/10*
U.S. Cl. 273—157 R **9 Claims**



1. A puzzle comprising three triangular tiles, three quadrilateral tiles, and one pentagonal tile,

wherein said tiles may be assembled on a horizontal surface to form a regular pentagon,

wherein each apical angle of each said tile is a multiple of 36 degrees, and the sides of said tiles occur in three lengths.

4,343,472

GOLF PUTTER WITH ALIGNMENT SYSTEM

Thomas R. Hamilton, 12394 Maple Ave., Goodrich, Mich. 48438

Filed Aug. 29, 1980, Ser. No. 182,829
Int. Cl.³ A63B *53/04*
U.S. Cl. 273—164 **5 Claims**

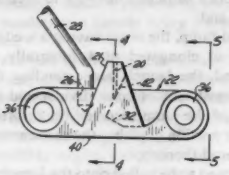
1. A putter head and alignment system, comprising:

a substantially flat striking face and a substantially flat rear surface;

a flat bottom portion and a flat top portion;

a central portion elevated relative to said top portion, said central portion having a front portion substantially flush with said striking face and a rear portion substantially flush with said rear surface, said central portion having at least one vertical sighting opening extending there-

through, said at least one opening lying in a plane at a right angle to the plane of said striking face, said central portion having an angled central cut-out portion thereby



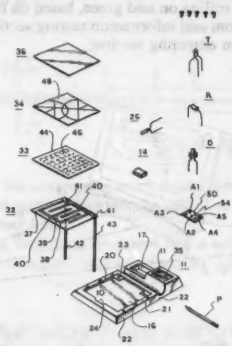
spacing the lower end of said opening from the bottom surface of said central portion, said bottom surface comprising a slanted, planar reflective surface that is angularly oriented with respect to said opening.

4,343,473
GOLF SWING TRAINER
Paul D. Laursen, 1620 Buckingham, Lincoln Park, Mich. 48146
Filed Jul. 11, 1980, Ser. No. 167,704
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—186 A **6 Claims**

1. A golf swing trainer consisting essentially of:
a hand grip;
a shaft formed of a flexible rope, said shaft connected to said hand grip at one end and having an opposed unweighted, free end unravelled for a predetermined distance to present a soft end on said shaft;
means, affixed to the shaft at the predetermined distance, for preventing further unravelling of the free end of the shaft;
the characteristics of the rope being such that the rope will extend to a straight, stiffened form to create the feel of a correctly swung golf club only when the golf swing trainer is swung through the hitting area at a predetermined velocity and timing.

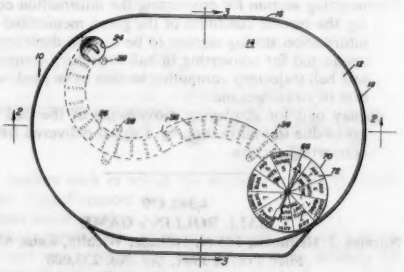
4,343,474
MULTIPLE GAME DEVICE
Steven Caney, P.O. Box 51, Carlisle, Mass. 01741
Filed May 19, 1980, Ser. No. 151,133
Int. Cl.[3] A63F *3/00*; G09B *7/00*
U.S. Cl. 273—237 **9 Claims**

1. A game device comprising a semi-conductor switch including a controlled output and a resistance responsive control input, a source of voltage, an electrically actuated signal member connected through said switch output across said source of voltage, a contact member including a first insulating panel having a pair of separate conductor members located along a first face thereof and defining a plurality of pairs of opposing, regularly spaced electrically separate contact sections, means connecting said conductor members to said switch input and a program member including a pliable second insulating panel superimposed on said first panel and having a first inside face thereof confronting said first panel, said first face of said second insulating panel having conducting sections bridging and engaging predetermined pairs of said contact sections and normally having relatively high electrical resistance interfaces with said predetermined pairs of contact sections and being responsive to pressure applied to the outside face of said second panel in the area of a conducting section to sufficiently



reduce the resistances at said interfaces between said conducting section and said contact sections to actuate said switch and energize said signal member, said conducting sections comprising lead pencil marks occupying corresponding areas of said second panel first face.

4,343,475
EARTHQUAKE GAME DEVICE
Irvin S. Stader, 3783 Alma Dr., Memphis, Tenn. 38127
Filed Feb. 11, 1981, Ser. No. 233,439
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—276 **6 Claims**

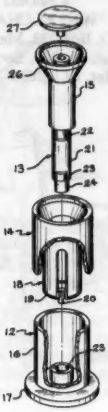


1. A game device comprising a building board forming an enlarged generally planar surface, means supporting the building board in elevated position from a supporting surface, a plurality of building blocks positionable on the upper surface of the building board to construct a block building, and an elongated, downwardly inclined trackway having the upper end connected to the building board and communicating with the upper surface of the building board through an opening and the other end oriented at a lower elevation in communication with a storage tray, at least one heavy ball rollable down the trackway by dropping it through the opening into the upper end thereof, and projections on the interior of the trackway engageable by the ball to produce noises and vibrations as the ball rolls down the trackway, simulative of earthquake conditions for producing noise and vibration of the building board to determine if the arrangement of building blocks on the building board will withstand the vibrations simulative of an earthquake.

4,343,476
PLAYING PIECE FOR A BOARD GAME

Robert W. Engel, 2745 Provincetowne, Toledo, Ohio 43613, and John R. Grube, 878 Maple La., Waterville, Ohio 43566

Filed Jun. 30, 1980, Ser. No. 163,941
Int. Cl.³ A63F 3/00
U.S. Cl. 273—289 7 Claims

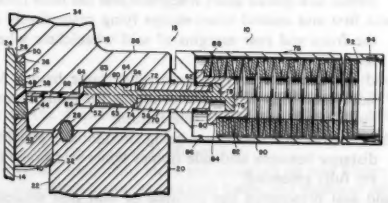


1. A playing piece for a board game, said piece comprising: a cup-shaped base adapted to be self-supporting on a horizontal surface and having an open top, a stem connected within and centrally in said base, said stem having an upper head portion protruding upwardly above the open top of said cup-shaped base, and a generally tubular jacket having one end receiving said body and being axially movable between an upper position wherein said head portion of said stem closes one end of said jacket and a lower position exposing the head portion of said stem above said jacket.

4,343,477
SEALING DEVICE WITH THERMAL EXPANSION PRESSURE ACCUMULATOR

Charles D. Bridges, Houston, Tex., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 4, 1981, Ser. No. 231,305
Int. Cl.³ F16J 15/40, 15/46
U.S. Cl. 277—73 6 Claims



1. For adequately but not excessively pressurizing an annulus of fluid viscous plastic sealant material that is received, confined and held compressed in an annular pocket coaxially between the outer periphery of a surrounded, inner metal part and the inner periphery of a surrounding, outer metal part,

a thermal expansion pressure accumulator comprising:

housing means providing a cylinder;

a piston sealingly slidingly received in the cylinder to provide a sealant reservoir chamber within the cylinder between one end of the piston and one end of the cylinder;

means providing a fluid passage for communicating the sealant reservoir chamber with the annulus of fluid viscous plastic sealant material;

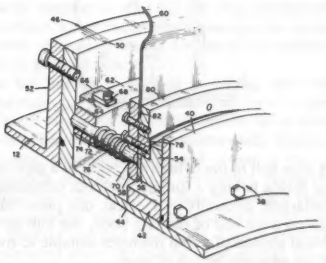
said reservoir chamber and fluid passage being adapted to be filled with fluid viscous plastic sealant material in communication with said annulus;

and compressible variable force means in operative contact with the opposite end of said piston so that, in use, as the pressure on said sealant tends to build up, said piston tends to retract in said cylinder and to correspondingly compress said compressible variable force means, and as the pressure on said sealant tends to fall, said compressible variable force means tends to extend said piston in said cylinder to apply more pressure to said sealant.

4,343,478
FACE SEAL ASSEMBLY FOR ROTATING DRUM

J. Giles Morgan; Mark J. Rennich, both of Knoxville, and Marvin E. Whatley, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 13, 1981, Ser. No. 243,395
Int. Cl.³ F16J 15/36
U.S. Cl. 277—90 11 Claims



1. An assembly comprising:

rotatable means having first and second surfaces projecting radially from and extending circumferentially of the axis of rotation thereof, said surfaces being spaced apart longitudinally of said axis;

a first ring one side of which abuts said first surface of said rotatable means;

a second ring abutting the other side of said first ring;

a flexible wall having an aperture therein, the portion of said wall adjacent said aperture being attached to said second ring and said wall projecting radially away from the axis of rotation of said rotatable means;

a third ring disposed between said second ring and said second surface of said rotatable means; and

means disposed between said second and third rings for urging them apart.

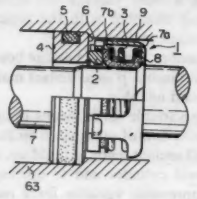
4,343,479
MECHANICAL SEALS

Tatsuhiko Fukuoka, Aichi, and Akira Takenaka, Nagoya, both of Japan, assignors to Taiho Kogyo Co., Ltd., Aichi, Japan

Filed Nov. 12, 1980, Ser. No. 205,955
Claims priority, application Japan, Nov. 13, 1979, 54/145990
Int. Cl.³ F16J 15/34
U.S. Cl. 277—96.2 2 Claims

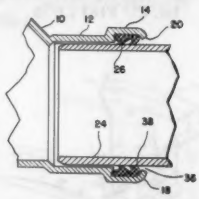
1. A mechanical seal for a swash-plate type compressor of an air-conditioner for an automobile, comprising a carbon-graphite sealing ring which rotates together with a rotating shaft, a stationary mating ring of hardened bearing steel which has a

lapped surface coming into contact with said sealing ring, the hardness of said lapped surface being in the range of H_r 500 to



H_r 900, and means for pressing said sealing ring against said stationary mating ring.

4,343,480
PIPE BELL AND GASKET
Efrain D. Vassallo, La Rambla G-558, Ponce, P.R. 00731
Filed Jun. 23, 1980, Ser. No. 162,377
Int. Cl.³ F16J *15/32*
U.S. Cl. 277—207 A **17 Claims**



1. A pipe bell in the cylindrical body of a pipe or fitting, the pipe or fitting having a longitudinal axis comprising

an enlarged, generally cylindrical, one piece hub formed in the forward end of the said body, the hub having a cylindrical section of a first diameter suitable to overfit an end of an adjacent length of pipe,

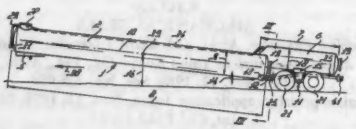
the hub including an integral, radially inward open, internal groove of a second diameter, the second diameter being greater than the first diameter,

the internal groove being defined forwardly by an integral, radially inward bent retainer,

the internal groove being defined rearwardly by an integral, circular, angular corner,

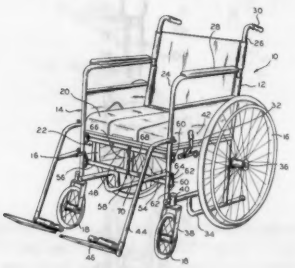
the bent retainer and the hub being of unitary construction.

4,343,481
COMPOSITE TANK FOR TRANSPORTING LIQUID
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland
Filed May 5, 1980, Ser. No. 147,067
Claims priority, application Netherlands, May 14, 1979, 7903760
Int. Cl.³ B60P *3/24*
U.S. Cl. 280—5 C **13 Claims**



1. A composite tank for transporting liquid material comprising one set of wheels, first and second tanks extending in the direction of travel from proximate said set of wheels, said first and second tanks located at a lower level than the upper aspect of a third tank in the vicinity of said set of wheels, said third tank being arranged on said set of wheels; said set of wheels being arranged substantially beneath, the middle of the length of said third tank.

4,343,482
WHEELCHAIR
Dieter F. Wegner, P.O. Box 222, Menomonee Falls, Wis. 53051
Filed Mar. 4, 1980, Ser. No. 127,100
Int. Cl.³ B62B *11/00*
U.S. Cl. 280—42 **3 Claims**



1. A wheelchair having a pair of opposed side frames each including portions which define front and rear ends thereof,

a seat removably mounted on the side frames,

wheel means rotatably mounted on each of said side frames,

first brace means pivotally mounted at each of its opposite ends to the front ends of said side frames and being collapsible intermediate its ends,

second brace means pivotally connected at its opposite ends to the rear ends of said side frames and also collapsible intermediate its ends,

third brace means pivotally connected at its opposite ends to the rear ends of said side frames and being collapsible intermediate its ends, said third brace means being disposed at an elevation of at least equal to that of said seat means,

said first and second brace means being pivotally mounted to the side frames for collapsing movement in a generally horizontal direction and the third brace means being collapsible in a direction generally perpendicular to the direction in which said first and second brace means collapses whereby said braces, when uncollapsed, support said side frames in a spaced apart when said seat has been removed,

said first and second brace means lying respectively along the front and rear margins of said wheelchair when extended,

said seat including a relatively rigid frame having lateral sides each of which includes means for being releasably mounted on one of said side frames,

the width of said seat means being substantially equal to the distance between said side frames when said brace means are fully extended,

said seat preventing the collapse of said first second and third brace means when mounted on said side frames,

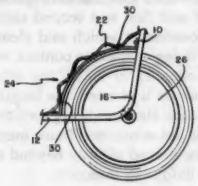
said seat means also having a central portion which is removably mounted on said seat frame to provide a central opening through said seat without affecting the rigidity of the seat frame,

said second brace means being disposed at an elevation at least equal to that of the lower edge of said seat means, the area below said seat means being otherwise unobstructed to permit said wheelchair to be backed over a toilet bowl.

4,343,483
WOOD TOTER

Leonard C. Base, Rte. #3, Kingman, Kans. 67068

Filed May 19, 1980, Ser. No. 151,174
Int. Cl.³ B62B 1/02
U.S. Cl. 280—47.26 3 Claims

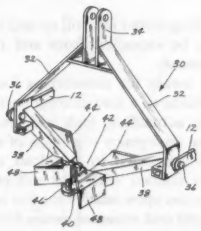


1. A wheeled carrier for hauling logs or the like comprising:
a frame defined by a continuous generally rectangular rod member configured into a substantially U-shape having a bottom and a pair of sides, one of said sides extending higher than the other with respect to said bottom, said higher side providing a handle gripped by a user so that a number of logs can be transported easily in said carrier;
a panel connecting to and essentially traversing the entire length of said frame while contouring the same;
a pair of wheels supported by sold frame and rotatably carried thereby,
said panel having a vertical section defining an arc which partially shelters said wheels, and a shield member between said arc and said rod frame and attached thereto to additionally partially shelter said wheels and to strengthen the construction of said carrier.

4,343,484
POWER HITCH

Ferne R. Van Antwerp, R.R. 1, Unionville, Iowa 52594

Filed Apr. 15, 1980, Ser. No. 140,668
Int. Cl.³ B62D 1/04
U.S. Cl. 280—479 A 2 Claims

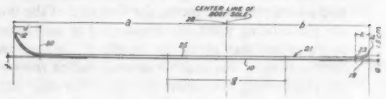


1. A power hitch for connecting a trailing implement draft tongue to the drawbar of a draft vehicle, said power hitch comprising:
a frame attached to said draft vehicle;
an upwardly extending hitch pin mounted on said frame;
two guide blocks attached to said frame and disposed adjacent to and at the lateral sides of said hitch pin, whereby said guide blocks contact the free end of said implement draft tongue and guide it to a position above said hitch pin;
an intermediate slot disposed immediately forward of said hitch pin;
means for rotating said guide blocks in the direction of said hitch pin, said guide block rotation means including means for biasing said guide blocks in a first position;
means for preventing rotation of said guide blocks in one direction including a clutch plate attached to said frame and a mating clutch sleeve connected to said guide block and biased in contacting relationship with said clutch plate;
means for moving said frame between a first lowered position, wherein said hitch pin will initially engage the free end of said implement draft tongue; and a second raised position wherein said hitch pin couples the trailing implement to the draft vehicle.

4,343,485
REVERSE CAMBER SKI

Norman H. Johnston, and David A. Johnston, both of Valparaiso, Ind., assignors to Ski World, Inc., Indianapolis, Ind.

Continuation of Ser. No. 18,800, Mar. 8, 1979, abandoned. This application Dec. 4, 1980, Ser. No. 213,012
Int. Cl.³ A63C 5/00
U.S. Cl. 280—609 6 Claims

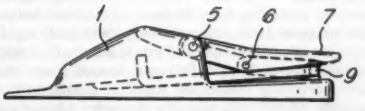


1. An improved snow ski especially useful for instruction and for use by beginning skiers to make conventional turns and for parallel skiing, said ski comprising, in combination:
an elongate ski member at least 120 cm. long having a tip, a bottom surface, a rear end, a binding section for receipt of a boot sole, sides, and means for improved stability in turns and in parallel skiing;
said means for improved stability including said bottom surface having a curved, smooth surfaced, reverse camber configuration extending from adjacent the tip to adjacent the rear end, said bottom surface substantially continuous, uninterrupted, substantially flat and planar in the transverse direction and defining a compound curve in the longitudinal direction with the bottom surface between the tip and a middle waist portion and the bottom surface between the rear end and the middle waist portion of the ski both elevated above the middle waist portion when the ski is in a horizontal plane to define a reverse camber, the sides having a side camber configuration with a waist substantially coincident with the middle waist portion intermediate the tip and rear end; the opposite sides being spaced a greater distance near the tip and rear end than at the waist; the ratio of maximum ski width to maximum ski length being less than 0.075 and decreasing toward the waist; the binding section having a center substantially coincident with the waist and middle waist portion; and the ratio of the length of the ski forward of the waist to the length of the ski rearward of the waist in the range of 1.25 to 2.00.

4,343,486
SKI BINDING

Sven I. Dysthe, Gamle Rykkinn vei 38, N-1349 Rykkinn, Norway

Filed Jun. 17, 1980, Ser. No. 135,658
Int. Cl.³ A63C 9/00
U.S. Cl. 280—615 5 Claims



1. A ski binding which comprises
a keeper element which includes a base portion and a bridge

portion, said base portion including two spaced-apart grooves therein extending below said bridge portion, and

a clamping mechanism for pulling and retaining a ski boot within said bridge portion of said keeper element, said clamping mechanism including

a generally U-shaped fixing strap which has two legs, a transverse portion connecting corresponding ends of said two legs, the opposite corresponding ends of said two legs having upwardly extending end portions intended to fit within said grooves in said keeper element base portion, and

a tensioning device for moving said U-shaped fixing strap such that it will slide in said grooves from a position wherein the upwardly extending end portions thereof are outside said bridge portion of said keeper element to a position wherein the upwardly extending ends thereof are within said bridge portion of said keeper element, said tensioning device including a tension arm rotatably connected to the bridge portion of said keeper element and an intermediate piece, the first end of the intermediate piece being rotatably connected to said tension arm at about halfway along the length of the tension arm to form a hinge joint and the second end of the intermediate piece being C-shaped and rotatably snap fitted onto said transverse portion of said U-shaped fixing strap, said tension arm and said intermediate piece being operable such that when said tension arm is rotated towards said base portion of said keeper element, said hinge joint will move downwardly to a dead point.

4,343,487

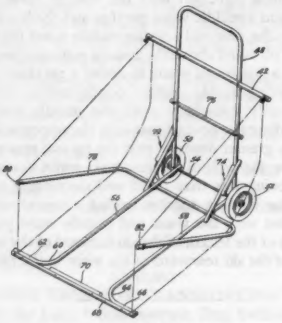
FOLDING CART

William R. Crothers, 424 W. Springfield Rd., Springfield, Pa. 19064

Division of Ser. No. 939,398, Sep. 5, 1978, Pat. No. 4,222,585. This application Jun. 2, 1980, Ser. No. 155,391

Int. Cl.³ B62B *11/00*

U.S. Cl. 280—654 **3 Claims**



1. A folding cart comprising:

a foldable scoop-shaped body, said body having an open front, a bottom wall, a rear wall, and side walls extending upwardly from the bottom wall;

a pair of wheels rotatable on an axis located adjacent the intersection of said rear wall and said bottom wall;

frame means comprising a first substantially rigid frame member extending from the front edge of said bottom wall thereof to said axis, and a second substantially rigid frame member extending from said axis at least to the upper edge of said rear wall, said first and second frame members being pivotally connected together substantially at the location of said axis, whereby the upper edge of said rear wall can be brought into close proximity to the front edge of said bottom wall; and

collapsible brace means connecting said first and second frame members, said collapsible brace means comprising a first element pivotally secured at one end to said first frame member and rotatable about an axis substantially parallel to the wheel axis and a second element pivotally secured at one end to said second frame member and rotatable about an axis substantially parallel to said wheel axis, said first and second elements being hinged together at an intermediate location between said frame members, and one of said first and second elements extending beyond the location at which said elements are hinged together and being adapted to contact, with its opposite end, the frame member to which the other of said first and second elements is pivoted, the length of said one of said first and second elements being such that said opposite end contacts the last-mentioned frame member only when said elements are moved slightly beyond their parallel condition in the unfolding direction.

4,343,488

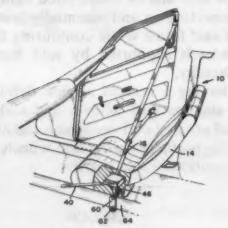
SEAT BELT SYSTEM WITH REDUCED SPOOLING

Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 5, 1979, Ser. No. 91,641

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **19 Claims**



1. A seat belt restraint system for installation in a vehicle, said system comprising:

seat belt retractor means adapted for mounting in said vehicle;

seat belt webbing stored in a roll on said retractor means and adapted to be extracted from and rewound onto said retractor means;

load transfer means for transferring forces acting on said retractor means to a load-bearing part of said vehicle;

locking means actuable to lock said retractor means in response to an emergency condition of said vehicle; and

clamp means connected to said load transfer means and adapted for contact with said roll of webbing on said retractor means upon relative motion between said clamping means and said retractor means following actuation of said locking means, whereby extraction of said webbing from said retractor means is prevented and said forces acting on said retractor means are transferred to said structural part of said vehicle.

4,343,489

SEATBELT SYSTEM

Ichiro Suzuki, Nagoya; Masanao Motonami, and Hisashi Ogawa, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 15, 1980, Ser. No. 150,133

Claims priority, application Japan, May 21, 1979, 54-68753[U]

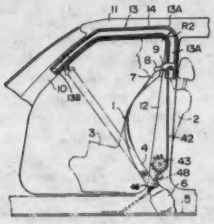
Int. Cl.³ B60R *21/02*

U.S. Cl. 280—804 **9 Claims**

1. A seatbelt system, wherein an end of an occupant restraining webbing is connected to a slider and said slider travels along a guide rail laid on a vehicle body so as to cause the

webbing to approach or recede from the body of an occupant, being of such an arrangement that:

said seatbelt system comprises a head, a body suspended from a central portion in cross-section of the head and inserted through a driving tape; and a leg extended from the lower end of the body secured with an anchor plate, to which the webbing is connected; and



said guide rail comprises a substantially letter 'T' shaped sliding groove including a head groove portion for slidably guiding the head of slider and a body groove portion for slidably guiding the body of slider and a tape groove perpendicularly intersecting the body groove portion of the sliding groove for receiving and guiding said driving tape.

4,343,490

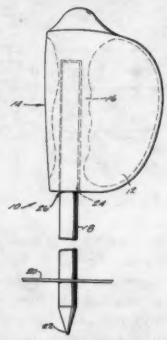
SAFETY SKI POLE GRIP

Jerome E. Adamson, 400 W. Brambleton Ave., Suite 300, Norfolk, Va. 23510

Filed Oct. 17, 1980, Ser. No. 198,067

Int. Cl.³ A63C *11/22*

U.S. Cl. 280—821 **9 Claims**



1. A ski pole hand shield comprising:

an enclosure member of rigid, non-deformable, highly impact-resistant material, and having means defining an access opening thereto, and dimensioned to enclose a skier's hand so as to protect the hand from injury; and

a hand grip integrally formed with said enclosure member and disposed within said enclosure member, said hand grip mounted adjacent said access opening for easy access through said access opening;

said hand grip having means defining a central bore therein and an opening in said enclosure member aligned with the central bore of said hand grip so that an end of a ski pole may be inserted through said aligned openings into said central bore and held by said hand grip.

4,343,491

SNOW DISK FOR A SKI STICK

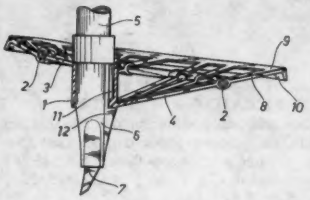
Yrjö Aho, Helsinki, Finland, assignor to Exel Oy, Finland

Filed Mar. 3, 1980, Ser. No. 126,647

Claims priority, application Finland, Feb. 16, 1979, 790526

Int. Cl.³ A63C *11/02*

U.S. Cl. 280—824 **4 Claims**



1. A snow disk for a ski stick, comprising a socket-shaped portion (1) for mounting on a ski stick (5, 6), said socket portion (1) having an upper edge and a lower edge, and a stiff annular rim (2) having a leading portion and a trailing portion and secured to the socket portion (1) by means of radially extending first and second, flexible support ribs (3, 4) which yield so that the annular rim (2) can pivot relative to the socket portion (1), characterized in that said first support ribs (3) are secured generally to the leading portion of said rim (2) and the upper edge of the socket portion (1) and said second support ribs (4) are secured generally to the trailing portion of said rim (2) and the lower edge of the socket portion (1), said first support ribs (3) being shorter than said second support ribs (4), said socket portion (1) and the support ribs (3, 4) together being generally Z-shaped in side view.

4,343,492

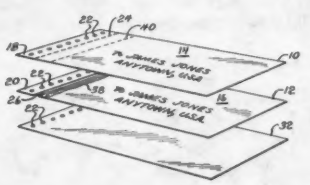
MULTIPLE PLY ADHESIVE BUSINESS FORM

Gary W. Fitzgibbons, Prairie View, Ill., assignor to UARCO Incorporated, Barrington, Ill.

Continuation of Ser. No. 131,250, Mar. 17, 1980, abandoned. This application Aug. 28, 1981, Ser. No. 297,438

Int. Cl.³ B41L *1/24;* B65D *27/00*

U.S. Cl. 282—11.5 R **4 Claims**



1. A business form comprising:

first and second superimposed plies of paper each including information receiving portions;

image transfer means at the interface of said first and second plies;

pressure sensitive adhesive on the face of one of said plies opposite said image transfer means;

a release liner releasably adhered to said pressure sensitive adhesive and removable therefrom to expose the pressure sensitive adhesive so that said one ply may be adhered to another object;

a slit extending through said one ply, but not through said release liner, severing the same into a gripping portion in addition to the associated information receiving portion; and

means securing the other ply to said one ply information

receiving portion in close adjacency to said slit, said securing means having greater strength than the adhesion between said release liner and said pressure sensitive adhesive;

whereby said release liner may be removed from said one ply information receiving portion by separately grasping said gripping portion and said other ply and separating the same.

4,343,493

DUPLICATING AND MARKING SYSTEMS

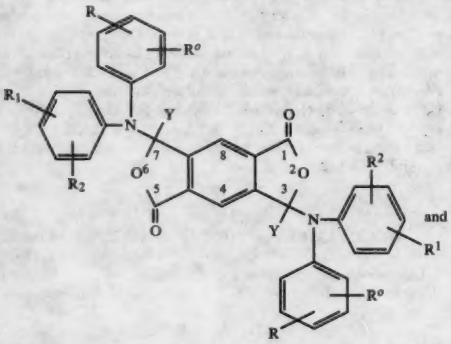
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Filed Aug. 29, 1980, Ser. No. 182,717

Int. Cl.³ B41M *5/16, 5/18, 5/22*

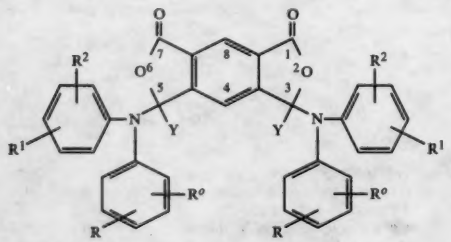
U.S. Cl. 282—27.5 **5 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system comprising a support sheet coated with a layer containing as a colorforming substance a compound selected from the group consisting of 3,7-bis(Y)-3,7-bis[N-(R, R°-phenyl)-N-(R^1, R^2-phenyl)amino]pyromellitide having the formula



and

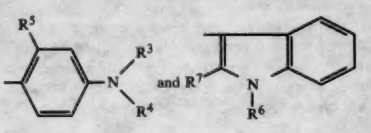
3,5-bis(Y)-3,5-bis[N-(R, R°-phenyl)-N-(R^1, R^2-phenyl)amino]-pyromellitide having the formula



and mixtures thereof wherein:

R, R°, R^1 and R^2 are the same or different and are selected from the group consisting of hydrogen, halo, hydroxyl, non-tertiary C_1 to C_4 alkoxy, non-tertiary C_1 to C_9 alkyl, COOZ and NZ^1Z^2 where Z and Z^1 are hydrogen or non-tertiary C_1 to C_4 alkyl and Z^2 is hydrogen, non-tertiary C_1 to C_4 alkyl, C_5 to C_7 cycloalkyl, C_1 to C_4 alkanoyl, phenylsulfonyl or phenylsulfonyl substituted by non-tertiary C_1 to C_4 alkyl;

Y is a radical selected from the group consisting of



in which

R^3 and R^4 are the same or different and are selected from the group consisting of non-tertiary C_1 to C_4 alkyl, benzyl, and benzyl substituted by one or two of halo, C_1 to C_4 alkyl, C_1 to C_4 alkoxy or nitro;

R^5 is selected from the group consisting of hydrogen, non-tertiary C_1 to C_4 alkyl, halo and non-tertiary C_1 to C_4 alkoxy;

R^6 is selected from the group consisting of hydrogen and non-tertiary C_1 to C_{12} alkyl; and

R^7 is selected from the group consisting of hydrogen, non-tertiary C_1 to C_4 alkyl and phenyl.

4,343,494

CARBONLESS COPY PAPER SYSTEM

Gerry H. Ehrhardt, W. Des Moines, and Gene D. Carlson, Ankeny, both of Iowa, assignors to Frye Copysystems, Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 159,587, Jun. 16, 1980, and Ser. No. 160,724, Jun. 18, 1980, said Ser. No. 160,724, is a continuation-in-part of Ser. No. 34,030, Apr. 27, 1979, abandoned, and Ser. No. 34,130, Apr. 27, 1979, abandoned, and Ser. No. 34,131, Apr. 27, 1979, abandoned. This application Nov. 21, 1980, Ser. No. 208,826

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **15 Claims**

1. A pressure sensitive chemical type transfer medium comprising:

planar sheet material having an at least partially transferable coating layer disposed on one surface thereof constituted by the solidified residue of an applied hot melt low oil content wax base emulsified liquid film including a chemically modified wax-like material having flow agent, dispersant and emulsifying properties and having discrete liquid droplets of a concentrated water base solution of ionized zinc chloride and an acidic halogen neutralizing agent dispersed therein and

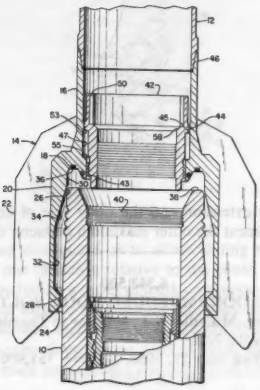
a non-transferable image producing receptor layer dispoed on the other surface thereof;

said image receptor layer comprising the solid residue of an applied alkaline biased liquid intermixture of an evaporable non-polar liquid hydrocarbon solvent vehicle, a non-acidic resinous binder, opacifier-filler material and a chromogenic reagent selected from the group consisting of tri (p-phenylamino) phenyl methanol and biphenyl triamino triphenyl methanol dispersed therewithin and being selectively convertable into a color producing condition upon interreaction with said zinc chloride chromogenic reagent material.

4,343,495
CONDUCTOR TIEBACK CONNECTOR

Philippe C. Nobileau, London, England, and Darrell L. Jones, Ventura, Calif., assignors to Vetco Offshore, Inc., Ventura, Calif.

Filed Feb. 11, 1980, Ser. No. 120,200
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—23 **4 Claims**



1. A conductor tieback connector for connecting a conductor to an internally threaded subsea wellhead comprising; a tubular body, sealably and rigidly connectable to the conductor; a downwardly extending funnel means for aligning the connector, rigidly connected to said tubular body, and having a first internal bearing surface remote from said tubular body and forming a diameter only slightly greater than the outside diameter of the wellhead, and a second internal bearing surface adjacent said tubular body forming a diameter only slightly greater than the outside diameter of said wellhead, said second surface vertically spaced from said first surface; abutting surfaces on the wellhead and said tubular body for abutting when said connector is fully engaged within the wellhead; lockdown means comprising, an externally threaded floating bushing located within said tubular body, a shoulder internal of said tubular body and having shoulder means thereon and engaging said shoulder means on said floating bushing for preventing downward movement of the bushing relative to said body, said bushing adapted to engage the internal threads of said wellhead and means for interlocking said bushing with a rotating tool, whereby rotation of said bushing locks said tubular body downwardly against said wellhead.

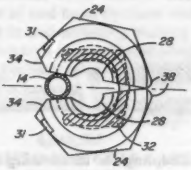
4,343,496
SPLIT GLAND

Joseph J. Petranto, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 31, 1980, Ser. No. 174,284
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—39 **11 Claims**

1. A split gland comprising:

a pair of separate unconnected essentially mirror image half glands, said pair fittable together about a mutual axis of rotation, each of said half glands comprising a threaded portion, a shoulder, a wrench engaging head portion a slot, and a concave inner surface along said mutual axis of rotation, said half glands being held together by a spring clip having a circumferential extent greater than 180 degrees disposed about said shoulders and being maintained essentially fixedly juxtaposed to one another with substantial thread alignment by a retainer fitted into said slot in each of said half glands wherein said spring clip allows said half glands to be spread sufficiently to allow said gland to be slipped laterally over tubing and wherein each said concave inner surface is defined by a wall portion and together engage the tubing and define a teardrop shape

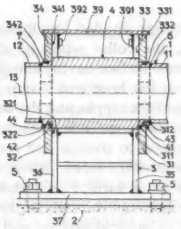


with the narrow portion being located at the area which passes laterally over the tubing so that upon removal of said gland from the tubing said teardrop shape inner surface promotes spreading of the gland.

4,343,497
FIXED POINT DEVICE BETWEEN PIPEWORK AND A SUPPORT

Jean-Yves Bot, Fontenay Sous Bois, France, assignor to Framatome, Courbevoie, France

Filed Jul. 24, 1980, Ser. No. 172,848
Claims priority, application France, Jul. 25, 1979, 79-19169
Int. Cl.³ F16L *3/10*
U.S. Cl. 285—61 **6 Claims**



1. Means for establishing a fixed point connection between piping and a supporting structure capable of absorbing axial, flexional and torsional forces applied to said piping, said means comprising a support structure comprising

(a) a sleeve mounted coaxially between two sections of said piping and welded to said sections, said sleeve having two plane and opposite bearing surfaces perpendicular to the axis of said piping, said support structure having corresponding opposite plane bearing surfaces in abutment with said hearing surfaces of said sleeve said bearing surfaces of support structure also being perpendicular to the axis of said piping;

(b) said sleeve further having at least two prismatic bearing surfaces each formed by at least two plane faces parallel with the axis of said piping; and

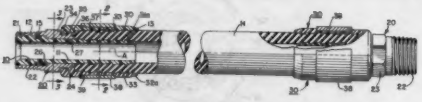
(c) said support structure comprising at least two prismatic seats each formed by plane faces parallel with the axis of said piping and equal in number to and closely surrounding said plane faces on said prismatic bearing surface;

(d) whereby, upon engagement of said prismatic bearing surfaces against said prismatic seats, rotation of said piping relative to said support structure is effectively prevented and said abutting bearing surfaces effectively preventing axial movement of said piping relative to said support structure.

4,343,498
SWIVEL HOSE COUPLING

Sergio Campanini, 224 E. Miller Rd., Iola, Kans. 66749

Filed Oct. 6, 1980, Ser. No. 193,993
Int. Cl.[3] F16L *33/22*
U.S. Cl. 285—174 7 Claims



1. A swivel coupling for terminating the end of a resilient hose having a bore therethrough, the coupling comprising:

(a) a tubular nipple having a central opening therethrough and having an outer surface including a cylindrical portion near one end stepping down in diameter at a shoulder to an annularly barbed portion adjacent to the other end, the barbed portion being tightly receivable in the hose bore;

(b) a screw fitting having a passage therethrough with a cylindrical wall portion snuggly receiving the cylindrical portion of the nipple, the fitting having a threaded portion facing away from the hose with wrench flats thereadjacent and the passage stepping down at a shoulder to a diameter sized to just pass said barbed portion of the nipple, said shoulders abutting each other when the coupling is assembled, and the fitting having an annular outwardly-extending abutment therearound adjacent to the hose;

(c) resilient fluid seal means operative between said cylindrical portions;

(d) an annular collar divided longitudinally into multiple shell portions, the collar when its shell are assembled having an internal surface having annular ribs therearound sized to receive the hose and clamp it tightly onto the barbed portion of the nipple, and the collar having near its end adjacent to the screw fitting an internal annular retaining groove shaped to overlie and rotatably engage the annular abutment of the screw fitting, and the collar having around its outer surface an external groove located about midway between the ends of the collar and having a substantially cylindrical surface; and

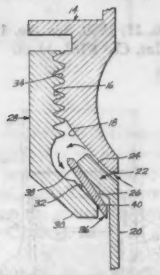
(e) means for retaining the shell portions assembled and tightly clamped on the hose comprising a band having a cylindrical inner surface fitting in the external groove.

4,343,499
BALL JOINT FLEXIBLE WEAR RING AND SEAL

William L. Dumar, Jr., Bellevue, and Jimmie E. Ledlow, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 16, 1980, Ser. No. 160,035
Int. Cl.[3] F16L *27/06*
U.S. Cl. 285—263 3 Claims

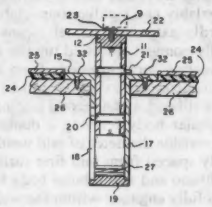
1. A sealed spherical coupling joint for ducting comprising: a retainer joined to one section of ducting and having a spherical outer surface; a flange joined to a second section of ducting with the flange having a spherical inner surface to match the retainer outer surface and a spherical outer surface; a retainer nut for joining the flange to the retainer with the nut having an extension with an inner spherical surface to match the outer surface on the flange; and a frustoconical shaped wear ring located between the flange and the nut and angled outward to provide a pair of spaced apart line of contact seals with one line of contact of the wear ring adjacent the inner minimum diameter of the nut extension and the other line of contact of the wear ring adjacent the outer maximum diameter of the flange.



4,343,500
FLOOR IMBEDDED DOOR BOLT

John W. Steiner, Millville, N.J., assignor to Thunderbolt Corporation, Millville, N.J.

Filed May 21, 1980, Ser. No. 151,900
Int. Cl.[3] E05C *1/10*
U.S. Cl. 292—175 8 Claims



1. A security door stop bolt for mounting in a carpet covered floor area located inside a door swinging to the inside of the structure to be protected, the bolt being out of the reach of anyone attempting entrance through the door comprising:

(a) a housing comprising a first attachment means to secure the housing to a floor and a tube depending therefrom imbedded in the floor,

(b) a door stop with a top slidably fitting in the tube below the upper surface of the floor,

(c) a lifting means to manually grasp the door stop and lift it to a height above the floor surface to prevent the door from being pushed open into the inside area,

(d) a retractable stop post means to hold the door stop at the upraised height, and

(e) a second attachment means to secure on top of the door stop, a cut out of carpet of the same shape as the top of the door stop housing.

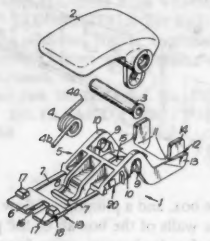
4,343,501
DOOR HANDLE ASSEMBLY

Alan M. G. Meeks, Basingstoke, England, assignor to ITW Limited, Windsor, England

Filed Mar. 3, 1980, Ser. No. 126,777
Claims priority, application United Kingdom, Mar. 1, 1979, 7907231
Int. Cl.[3] E05C *3/00, 5/00, 19/14*
U.S. Cl. 292—336.3 11 Claims

1. An adjustable mounting for assembly to a panel, compris-

ing a main part and a foot, the foot being a substantially planar component and having on one face means to snap-engage in an aperture in the panel in order to secure the foot on one side of the panel, and on its other face a series of teeth, and the main part including abutment surfaces to engage the side of the panel remote from the foot, the abutment surfaces being so



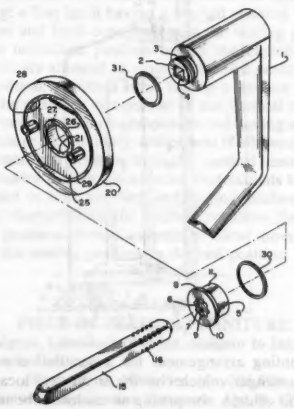
positioned and configured as to allow sliding motion of the main part in one direction relative to the panel, and the main part further including a series of teeth complementary to those of the foot and situated between the abutment surfaces so that when the abutment surfaces engage the panel the teeth of the main part engage those of the foot to resist relative motion between the main part and the foot in one direction.

4,343,502

DOORKNOB CONSTRUCTION

Kenneth R. Nelson, West Vancouver, Canada, assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Oct. 9, 1980, Ser. No. 195,390
Int. Cl.³ E05B *15/02*
U.S. Cl. 292—356 **7 Claims**



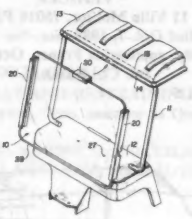
1. A doorknob assembly comprising:
a rotating hand operator threaded about its centerline of rotation at one end;
a non-circular bore in said operator along said centerline of rotation;
an adjustment bushing in threaded engagement with the thread on said hand operator;
said adjustment bushing having a shoulder provided at one end opposite said hand operator and a journal bearing surface concentric about said centerline of rotation intermediate said shoulder and the opposite end of said adjustment bushing;
a hand operator mounting means disposed for rotation on and orientation about said journal bearing surface;
said adjustment bushing being further provided with an indexing non-circular hole at said one end disposed concentrically about said centerline of rotation; and
a spindle of non-circular cross section inserted into said non-circular bore of said hand operator and said indexing non-circular hole in said adjusting bushing and cooperating with each to rotate said spindle and prevent rotation of said adjustment bushing relative to said hand operator once said spindle is inserted.

4,343,503

SNAP-ON WINDSHIELD FOR GOLF CARTS AND LIKE VEHICLES

Donald G. Samuelson, and Paul R. Farris, both of Augusta, Ga., assignors to Club Car Inc., Augusta, Ga.

Filed Jul. 18, 1980, Ser. No. 169,957
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—84 D **12 Claims**



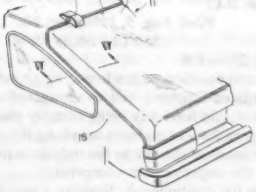
10. In combination, an all weather vehicle with a replaceable windshield, such as a golf cart,
a vehicle cowling,
a framework mounted on the cowling for mounting the windshield presenting a pair of substantially parallel vertically disposed rods with a top cross connecting link rod section, and
a selectively removable windshield having a snap-on rim with mounting structure thereon comprising a resilient plastic extruded frictional member engaging the windshield and having a substantially U-shaped extension extending perpendicular thereto and disposed to mate with and frictionally snap on said framework rods.

4,343,504

ALL GLASS REAR DOOR ASSEMBLY FOR AN AUTOMOTIVE VEHICLE

Hirotaka Tomioka, and Shuji Yamagata, both of Yokohama, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 2, 1980, Ser. No. 145,950
Claims priority, application Japan, May 7, 1979, 54-60387[U]
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—76 **7 Claims**



1. A glass rear door assembly for an automotive vehicle

having a vehicle body formed with a rear access opening, said door assembly comprising:

(a) a glass rear door hingedly mounted to the vehicle body in a manner to close the rear access opening, said door comprising:

(i) a substantially flat main body portion;

(ii) substantially flat side portions formed integrally with said main body portion and extending at an angle thereto to conform to the adjacent exterior surface portions of the vehicle body when said door is in its closed position;

(iii) said main body portion and said side portions forming transition portions along their angled junction lines; and

(b) a weatherstrip mounted on the vehicle body adjacent the access opening inboard of the body exterior surface portions, said weatherstrip sealingly contacting said rear door flat main body portion immediately inboard of said transition portions when said door is in its closed position.

4,343,505

EDDY-ELIMINATING ARRANGEMENT FOR A TOWING VEHICLE

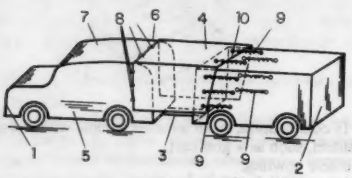
Jean Levassor, 11 Villa Molitor, 75016 Paris, France

Filed Oct. 7, 1980, Ser. No. 195,216

Claims priority, application France, Oct. 8, 1979, 79 24961

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **4 Claims**



1. An arrangement for preventing eddy formation between a towing vehicle and a towed vehicle comprising a nonrigid sheet which overlies the opposing sides and the top of a transverse section of the towing vehicle and which extends rearwardly therefrom and overlies the top and opposing sides of the towed vehicle adjacent the front part of the towed vehicle, the said sheet being releasably attached to and bearing against the opposing sides and the top of the towing vehicle, and said sheet being releasably secured to the towed vehicle by spring means which are disposed between said sheet and the top and opposing sides of the towed vehicle and which keep the sheet stretched against the opposing sides and the top of the said towed vehicle in all relative positions of the two vehicles.

4,343,506

LOW-DRAG GROUND VEHICLE PARTICULARLY SUITED FOR USE IN SAFELY TRANSPORTING LIVESTOCK

Edwin J. Saltzman, North Edwards, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

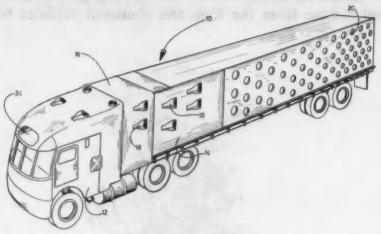
Filed Aug. 5, 1980, Ser. No. 175,453

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **7 Claims**

1. In combination with a low-drag ground vehicle including a streamlined forebody and an elongated, substantially closed cargo box, said forebody being suitably shaped for establishing an attached flow of ambient air along the surface of the upper and side walls of the box as the vehicle is propelled at highway speeds, the improvement comprising:

means for continuously flushing gases from the box as the vehicle is propelled at highway speeds including a ram air inlet system with an intake flushly disposed on said forebody and a plurality of submerged inlets defined in the walls of the box for ingesting portions of the attached flow and delivering the ingested portions of the flow to the



interior of the box, and a plurality of flow discharge ports defined in the walls of the box aft of the plurality of submerged inlets for discharging gases from the interior of the box to the attached flow.

4,343,507

MOUNTING ARRANGEMENT FOR A VENTILATION OR HEATING SYSTEM FOR VEHICLES

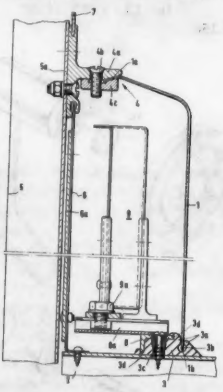
Wolfgang Heuer, Düsseldorf, and Wilhelm Gerhardinger, Dormagen, both of Fed. Rep. of Germany, assignors to Duewag Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Jun. 6, 1980, Ser. No. 157,648

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1979, 2923086

Int. Cl.³ B62D *25/00*

U.S. Cl. 296—208 **7 Claims**



1. A mounting arrangement for a ventilation or heating system for passenger vehicles having an air duct located in the interior of the vehicle, comprising an enclosure bounding said air duct, said enclosure including a profile of an angularly-shaped cross-section, said profile having a first end portion and a second end portion; support means for supporting said first end portion and secured to the floor of the vehicle and formed of an elastic material, said support means including a pair of projecting lips forming a free space therebetween, said first end portion having an end extended into said free space and engaged by said lips, said second end portion of said profile being inclined toward the floor at the vehicle with the line of inclination tangent to a circumference having a center point located at said end of said first end portion; and clamping means connected to a side wall of the vehicle and arranged to secure said second end portion of said profile, said clamping means includ-

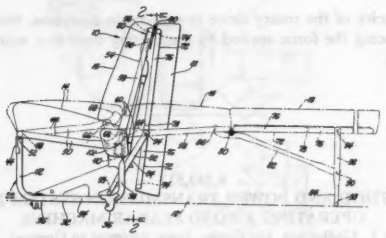
ing a gap to engage said second end portion, said gap being inclined in the direction corresponding to that of said second end portion to thereby facilitate dismounting of said profile by releasing said profile from said gap and pivoting said profile relative to said center point in the direction from said gap.

4,343,508

LATCH MECHANISM FOR VEHICLE SEAT CONVERTIBLE TO BED

Dennis H. Heling, Canton; Walter Lyszczarz, Westland, and Frank J. Sposite, Clinton, all of Mich., assignors to Lear Siegler, Inc., Livonia, Mich.

Filed Jan. 18, 1980, Ser. No. 113,147
Int. Cl.³ A47C *13/00, 17/16*
U.S. Cl. 297—114 **10 Claims**



1. In a vehicle seat including cushion, back, and auxiliary components and also including a support linkage that connects the cushion and back components and mounts the auxiliary component on the back component such that the seat is movable between a seating position where the auxiliary component extends vertically at the rear of the back component and a bed position where the components extend generally horizontally, a latch mechanism for securing the seat in the seating position comprising: a first latch having a latched position for securing the cushion and back components in the seating position and having an unlatched position where the cushion and back components are allowed to move to the bed position from the seating position; a second latch having a latched position for securing the auxiliary component in the vertical seating position at the rear of the back component and having an unlatched position where the auxiliary component is allowed to move to the horizontal bed position from the vertical seating position; and an actuator having a connector that extends between and is connected to both the first and second latches to provide movement thereof from the latched positions thereof to the unlatched positions thereof in order to allow movement of the seat from the seating position to the bed position.

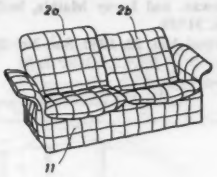
4,343,509

PIECE OF SEATING FURNITURE

Gillis Lundgren, Lönashult, Sweden, assignor to Inter-ikea A/S, Humlebaek, Denmark

Filed Apr. 2, 1980, Ser. No. 136,729
Claims priority, application Denmark, Apr. 9, 1979, 1479/79
Int. Cl.³ A47C *15/00*
U.S. Cl. 297—232 **7 Claims**

1. A piece of seating furniture shaped as a sofa comprising a hollow upwardly open lower part (**1**) having a tube frame (**11**) with two side member-forming frame portions (**11***a*, **11***b*) and separated front and rear supporting portions (**1***a*, **1***b*) respectively provided with upwardly and downwardly curved supporting surfaces (**1***a'*, **1***b'*), said supporting portions being a pair of front auxiliary tubes (**11***c*, **11***d*) and a pair of rear auxiliary tubes (**11***e*, **11***f*), both pairs of auxiliary tubes being connected to the side member frame portions, a preferably H-shaped bracing member (**19**) made of tube provided between the supporting portions (**1***a*, **1***b*), and at least two seat and back units (**2***a*, **2***b*) loosely arranged on top of the lower part (**1**) and resting on the supporting portions and being unconnected thereto, said seat-and back units each having a seat portion and a back portion with each of said portions having a substantially planar top surface and a back surface which is slightly curved



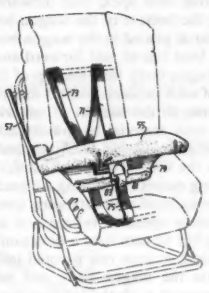
to have a curvature corresponding to the curvature of said supporting surfaces, said seat and back portions being connected together to form an angle (α) of about 90–120 degrees with respect to each other, said angle for said units being seperately adjustable.

4,343,510

CHILD CAR SEAT AND RESTRAINING SYSTEM

Richard E. Cone, Dayton, Ohio, assignor to Questor Corporation, Toledo, Ohio

Filed Mar. 31, 1980, Ser. No. 135,933
Int. Cl.³ A47C *31/00;* **B60R** *21/10*
U.S. Cl. 297—250 **11 Claims**



1. In a child's car seat including an adjustable frame and a unitary seat and back structure, an improved restraining apparatus comprising

a U-shaped member pivotally mounted at its terminal ends to opposite sides of the upper portion of said frame so as to be movable between positions above the occupant and in front of the occupant;

a padded shield mounted about the bight of said U-shaped member;

at least one pair of opposed slots in the back of said seat structure;

a shoulder harness strap extending through each of said slots, said straps being secured together at one of their ends behind said back of said seat structure;

means secured to the underside of said shield for adjustably retaining the other ends of said shoulder harness straps, said straps passing under the inner edge of said shield;

a crotch strap secured at one end thereof to said one end of said shoulder straps;

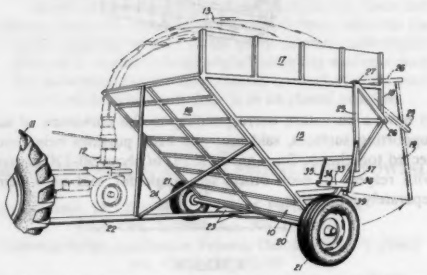
a slot in said seat structure, said crotch strap passing under said seat structure and upwardly through said slot in said seat structure; and

releasable latching means for securing the other end of said crotch strap to said underside of said shield.

4,343,511
SILAGE WAGON

Robert A. Rowan, and Leroy Mathis, both of P.O. Box 68, Enigma, Ga. 31749

Filed Aug. 28, 1980, Ser. No. 182,107
Int. Cl.³ B60P *1/56*
U.S. Cl. 298—6 **4 Claims**



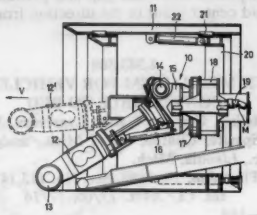
4. A self-emptying silage wagon comprising a generally triangular wagon body having an open level top and an apex at its bottom on a transverse axis, the wagon body having substantially vertical side walls and forward and rear inclined walls rising from said apex, said forward and rear inclined walls forming the bottom of the wagon body and bearing the weight of material placed in the wagon body, means hingedly connecting at least one of said forward and rearward inclined walls to the wagon body near the top of the wagon body and near the top of such inclined wall so that the latter may swing open in response to the weight of material thereon to completely dump such material by gravity action without tilting the wagon body, releasable latching means for said one inclined wall on the wagon body and on said one inclined wall, and said latching means comprising a biased rotational latching bar on said one inclined wall extending transversely thereof, at least one remotely operated release arm secured to the rotational latching bar to turn it in a direction opposite to that in which it is biased, at least one pivoted latch member for said latching bar on the wagon body and being biased toward latching engagement with the latching bar, and a release element for said latch member on the latching bar and turning therewith in response to remote operation of said release arm.

4,343,512
CUTTER DRIVE REGULATION APPARATUS FOR A TUNNELLING MACHINE

Herbert Heitkamp, Werne, and Werner Dehmel, Lünen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Aug. 15, 1980, Ser. No. 178,419
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1979, 2933597
Int. Cl.³ E21D *9/08*
U.S. Cl. 299—1 **12 Claims**

1. Apparatus for regulating the capacity of a tunnelling machine having a rotatable cutting head mounted at one end of an arm, the other end of the arm being pivotally mounted in the chassis of the tunnelling machine about a pivot pin whose axis extends transversely to the axis of the arm, a rotary drive for rotating the arm about the axis of the tunnel being formed, and drive means for rotatably driving the cutting head about the longitudinal axis of said arm, the regulation apparatus comprising: regulator means for regulating the rotary drive of the arm in dependence upon the capacity of the cutting head drive means, and a device for measuring the angle between the axes of the arm and the tunnel, said regulator means being responsive to an output of said measuring device for decreasing the

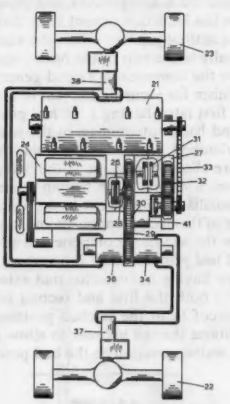


capacity of the rotary drive as said angle decreases, thereby reducing the force applied by the cutting head to a working face.

4,343,513
METHOD AND POWER TRANSMISSION SYSTEM FOR OPERATING A ROAD PLANAR MACHINE

Gary L. Godbersen, Ida Grove, Iowa, assignor to Gomaco, Inc., Ida Grove, Iowa

Filed Aug. 25, 1980, Ser. No. 181,163
Int. Cl.³ E01C *23/09*
U.S. Cl. 299—1 **5 Claims**



4. The method of automatically controlling the load on a single power unit that rotates a rotary cutting unit on a ground working machine and drives the machine traction units, comprising the steps of:

(a) rotating the cutting unit in a direct gear driven relation from the power unit,

(b) operating a variable volume displacement pump and associated traction unit in a direct gear driven relation from the power unit,

(c) electrically indicating a set rotational speed of the power unit to drive the cutting unit at a predetermined rotational speed and the traction unit at a predetermined road speed,

(d) electrically actuating the variable volume displacement pump in direct response to a drop in the indicated set rotational speed of the power unit to simultaneously reduce the road speed of the machine and maintain the rotational inertia force of the cutting unit.

4,343,514

RESONANT TOOL DRIVING SYSTEM WITH GAP

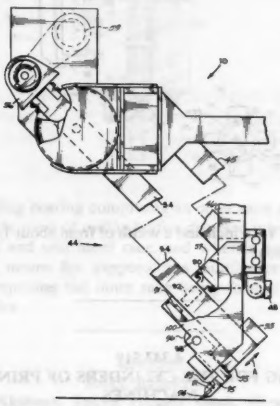
Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 973,161, Dec. 26, 1978, Pat. No. 4,229,046, which is a continuation-in-part of Ser. No. 873,249, Jan. 30, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 128,748

The portion of the term of this patent subsequent to Nov. 10, 1998, has been disclaimed.

Int. Cl.³ E01C *23/09*

U.S. Cl. 299—37 **4 Claims**



1. Resonant work performing apparatus comprising:

a resonant system that is vibratory in resonance at an unloaded resonant frequency near which the resonant system has a vibratory input, an output vibratory in first and second opposite directions about a neutral position responsive to vibrations at the input, and at least one vibratory node;

a frame rigidly attached to the resonant system substantially at the node, said frame preventing substantially all motion of the resonant system relative to the frame except the vibratory resonance thereof;

a load receiving periodic impulses from the vibratory output is the output moves in said first direction;

means for applying a vibrational force to the input of the resonant system at or near the unloaded resonant frequency to excite the resonant system to at least near resonance; and

means for establishing and maintaining a gap between the neutral position of the vibratory output and the load to prevent cessation of resonance when the load is excessive to minimize the transmission of the applied vibrational force to the frame.

4,343,515

DEVICE FOR ROTATING A BODY

Robert H. Higgs, Burton-on-Trent, and John M. Jones, Etwall, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Oct. 19, 1979, Ser. No. 86,437

Claims priority, application United Kingdom, Nov. 3, 1978, 43098/78

Int. Cl.³ E21C *25/08*

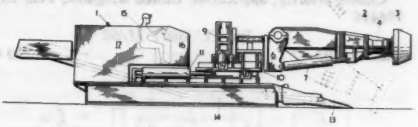
U.S. Cl. 299—75 **5 Claims**

1. A device for rotating a body, comprising:

a pivotally mounted yoke having a slot in which is slidably mounted a member adapted, in use, to be attached rotatably and eccentrically to the body;

a pair of opposed pivotally mounted rams each of which is rotatably attached to the yoke and which are connected to be operated out of phase;

a third ram coplanar with the pair of rams connected between the member and the yoke; and



switching means which co-ordinate the actions of the rams such that the pair of rams pivot the yoke about its mounting, the third ram moves the member longitudinally to and fro in the slot and the pivotal movement of the yoke and the longitudinal movement of the member is translated into a rotary movement of the body.

4,343,516

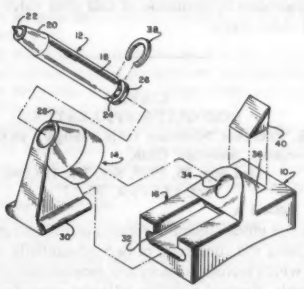
CUTTER BIT ASSEMBLY

Michael L. Aden, Indiana, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lakes, N.J.

Filed Aug. 11, 1980, Ser. No. 176,986

Int. Cl.³ E21C *35/18*

U.S. Cl. 299—86 **12 Claims**



1. A cutter bit assembly comprising:

a. an elongated cutter bit;

b. a bit holder having an engaging body portion wherein the engaging body portion is a bifurcation and a first elongated opening for receiving the elongated cutter bit;

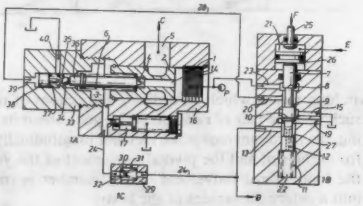
c. a bit block having an engaging means for receiving the engaging body portion of the bit holder and a second elongated opening for receiving the elongated cutter bit; and

d. means for removably affixing the elongated cutter bit to the cutter bit assembly wherein the elongated cutter bit having been received by the bit holder and the bit block locks the bit holder to the bit block.

4,343,517
HYDRAULIC BRAKING SYSTEMS FOR TRACTOR-TRAILER COMBINATIONS

Henry J. Levington, Snelland, England, assignor to Clayton Dewandre & Company Limited, Lincoln, England

Filed Feb. 22, 1980, Ser. No. 123,641
Claims priority, application United Kingdom, Feb. 23, 1979, 796416
Int. Cl.³ B60T *13/68*
U.S. Cl. 303—7 10 Claims



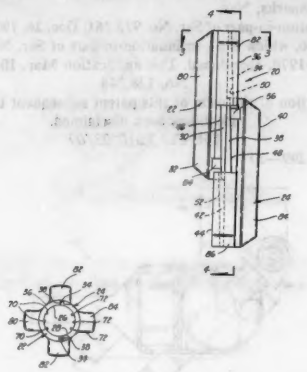
1. A hydraulic braking system for a tractor-trailer combination having a hydraulic pressure source on the tractor, a tractor braking circuit for tractor brakes and a trailer braking circuit for trailer brakes, said trailer braking circuit including a connection to said trailer brakes and a connection to a return line, a pressure control valve connected between said source and said trailer braking circuit and operable to provide hydraulic braking fluid under pressure through a service outlet to said trailer braking circuit, said pressure control valve having a chamber and a restricted bypass connecting said source to said chamber for conveying braking fluid under pressure to said chamber, conduit means connected to an outlet of said chamber for conveying bypassed braking fluid under pressure to said trailer braking circuit, a pilot valve in the trailer braking circuit connected to said conduit means and operable for selectively controlling admission of hydraulic braking fluid under pressure to the trailer brakes or to the return line, a pilot operated check valve disposed at a further outlet for said chamber, means controlled by actuation of said pilot valve for controlling said check valve.

4,343,518
ROD GUIDE APPARATUS

Melvin E. Pourchot, Shawnee, Okla., assignor to Central Plastics Company, Shawnee, Okla.

Filed Sep. 26, 1980, Ser. No. 191,086
Int. Cl.³ F16C *29/02*
U.S. Cl. 308—4 A 5 Claims

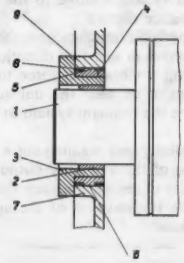
1. In a rod guide apparatus formed of a plastic material for a reciprocating rod comprised of two substantially identical half sections which include semicircular recesses therein adapted to be lockingly clamped together adjacent opposite sides of the outer periphery of the rod whereby the rod extends through a circular bore formed by the semicircular recesses in the half sections, the improvement comprising each of said half sections including three longitudinally extending ridges on said surface of said semicircular recess thereof, one of said ridges being positioned at the center of said surface when said recess is viewed laterally and the other two ridges being positioned one on either side of said center ridge at equal distances therefrom whereby when said half sections are clamped together adjacent opposite sides of said rod, the three ridges of each half section contact opposite sides of said rod over arcs of about 60 degrees to 70 degrees and said bore formed by said semicircular recesses through which said rod passes is deformed into an elliptical shape in cross section so that said clamped together half sections contact the periphery of said rod at at least four points, each of said ridges having a height of from about 1/32 inch to about 1/16 inch and a width of from about 1/32 inch to about 3/32 inch.



4,343,519
BEARING FOR THE CYLINDERS OF PRINTING MACHINES

Horst Schulz, Dresden; Arndt Jentzsch, Coswig; Werner Kühnert, Radebeul; Heiner Fink, Dresden; Frank Junker, Radebeul; Günter Lehmann, Coswig; Hans Johne; Peter Kahlert, both of Radebeul, and Norbert Dittmann, Dresden, all of German Democratic Rep., assignors to VEB Kombinat Polygraph "Werner Lamberz" Leipzig, Leipzig, German Democratic Rep.

Filed May 23, 1980, Ser. No. 152,575
Int. Cl.³ F16C *23/02*
U.S. Cl. 308—37 5 Claims

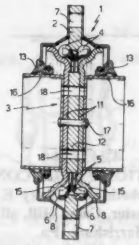


1. A bearing arrangement for cylinders utilized in printing machines and adapted to support a cylinder trunnion within a machine frame, comprising a first sliding bushing encompassing the cylinder trunnion; a flange bearing surrounding said sliding bushing, said flange bearing being supported in the machine frame and having a radially extending face mounted in contact with the respective face of the machine frame and an axially extending circumferential surface, said machine frame being provided with an axial bore; and means for compensating for misalignment between said flange bearing and the machine frame including a second bushing mounted between said axially extending circumferential surface of said flange bearing and said axial bore of the machine frame.

4,343,520
ROLLING BEARING

Enrico Bertone, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed Sep. 23, 1980, Ser. No. 189,569
Claims priority, application Italy, Sep. 21, 1979, 53582/79[U]
Int. Cl.³ F16C *19/18*
U.S. Cl. 308—178 10 Claims

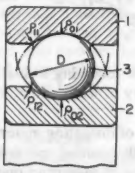


1. A rolling bearing comprising an outer race, an inner race, two or more rows of rolling bodies disposed intermediate said outer race and said inner race, and wherein said inner race comprises means for supporting a cantilevered shaft, said means comprising the inner race being formed by first and second disks.

4,343,521
BALL BEARING

Yukihiro Akabane, Tokyo; Hisashi Satoh, Hiratsuka; Yukio Shiraiwa, Yokohama, and Shuyou Tsuchiya, Fujisawa, all of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 21, 1980, Ser. No. 170,660
Claims priority, application Japan, Aug. 23, 1979, 54/106602
Int. Cl.³ F16C *19/06, 33/58*
U.S. Cl. 308—193 2 Claims



1. In a ball bearing including an outer race, an inner race and ball-like rolling members interposed between said two races, the orbit grooves of said two races and being non-circular, the improvement residing in that when the orbit groove coefficient F_1 of said outer race and the orbit groove coefficient F_2 of said inner race are respectively expressed as

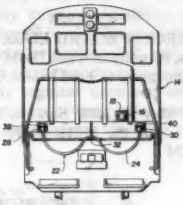
$$F_1 = \frac{\frac{\rho_{11}}{D} - 0.5}{\frac{\rho_{01}}{D} - 0.5} \qquad F_2 = \frac{\frac{\rho_{12}}{D} - 0.5}{\frac{\rho_{02}}{D} - 0.5}$$

where ρ_{01} is the curvature radius of the groove bottom of the orbit groove of said outer race, ρ_{11} is the curvature radius of the groove edge of the orbit groove of said outer race, ρ_{02} is the curvature radius of the groove bottom of said inner race, ρ_{12} is the curvature radius the groove edge of said inner race and D is the diameter of said ball-like rolling members, F_1 is smaller than F_2.

4,343,522
JUMPER CABLE SYSTEM FOR RAILWAY TRAINS

Paul T. O'Neil, Bethesda, Md., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Sep. 5, 1980, Ser. No. 184,374
Int. Cl.³ H01R *13/60;* B60D *1/08*
U.S. Cl. 339—10 8 Claims



1. In combination, a first locomotive unit and a second locomotive unit mechanically coupled together in a consist,

the first locomotive unit and the second locomotive unit each including first and second live electrical receptacle mounted on the front end and rear end, respectively of the locomotive unit, the first and second live electrical receptacles being located on opposite sides of the longitudinal vertical center plane of the locomotive unit,

an elongated jumper cable having a first end and a second end,

an elongated flexible support element,

means permanently connecting one end of the elongated flexible support element to the front end of the second locomotive unit adjacent the region of the longitudinal vertical center plane of the second locomotive unit,

means permanently attaching the other end of the elongated flexible support element to the elongated jumper cable intermediate the ends thereof,

a first dummy receptacle and a second dummy receptacle each permanently mounted on the front end of the second locomotive unit,

the first dummy receptacle being mounted adjacent one side of the second locomotive unit displaced in one direction from the longitudinal vertical center plane of the second locomotive unit,

the second dummy receptacle being mounted adjacent the other side of the second locomotive unit displaced in an opposite direction from the longitudinal vertical center plane of the second locomotive unit,

the elongated jumper cable including a connector head at one of its ends adapted to be received by the first live electrical receptacle mounted on the front end of the second locomotive unit and adapted to be received by the first dummy receptacle,

the elongated jumper cable including a connector head at its other end adapted to be received by the second live electrical receptacle at the rear end of the first locomotive unit and adapted to be received by the second dummy receptacle,

the length of the elongated jumper cable and the length of the elongated flexible support element being selected relative to the distance between the first live electrical receptacle mounted on the front of the second locomotive unit and the second live electrical receptacle mounted on the rear of the first locomotive unit so that when the elongated jumper cable is used to electrically connect the first and second locomotive units the elongated jumper cable is supported intermediate its ends by the elongated flexible support element and its adapted to be supported by the live electrical receptacles on the front of the second locomotive unit and on the rear of the first locomotive unit, and

the length of the elongated jumper cable and the length of

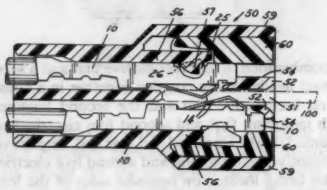
the elongated flexible support element being selected relative to the distance between the first dummy receptacle and the second dummy receptacle so that the elongated jumper cable when not used to form an electrical connection between the first and second locomotive units is supported intermediate its ends by the elongated flexible support element and is adapted to be supported at its ends by the dummy receptacles.

4,343,523

PRINTED CIRCUIT BOARD EDGE CONNECTOR

Thomas M. Cairns, Birmingham, and David G. Connors, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 27, 1980, Ser. No. 153,812
Int. Cl.³ H01R *13/40*
U.S. Cl. 339—59 M **5 Claims**



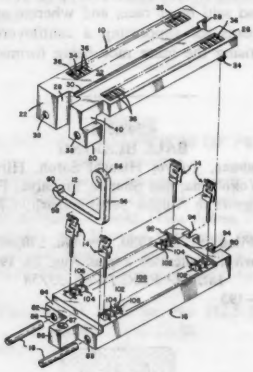
1. A printed circuit board edge coupling means for connecting to conductor portions of a printed circuit board, said coupling means including a connector and a plurality of terminals;
said connector including a contact receiving slot cavity with an entrance extending across the width of said connector, said cavity being adapted to receive the conductive portions at the edge of a printed circuit board, said cavity having a pair of spaced apart walls extending parallel to the plane of insertion of the printed circuit board into said coupling means;
said terminals being positioned along said cavity adjacent said walls on sides opposite from said cavity;
said walls having a plurality of contact openings for passing a portion of said terminals so that said terminals can have access to the conductor portions on a printed circuit board inserted into said cavity, pairs of said openings being generally opposed along said slot cavity and staggered forward and rearward in a direction parallel to the direction of insertion of the printed circuit board into said slot cavity so that insertion of a printed circuit board edge successively engages each one of a pair of said terminals at the same longitudinal position thus reducing the magnitude of the peak force during insertion of the printed circuit board, and preventing generally opposing terminals from shorting;
adjacent contact openings in the same wall also being staggered forward and rearward in a direction parallel to the direction of insertion of the printed circuit board into said slot cavity so that said printed circuit board is centered between said spaced apart walls as said printed circuit board is inserted, first by portions of said terminals extending through a first group of contact openings nearest said entrance and then by portions of said terminals extending through a second group of contact openings furthest from said entrance;
said walls having a plurality of aligned troughs for receiving said terminals;
said troughs having a generally U-shaped cross section with an open side and being formed on the sides of said walls opposite from said cavity;
one of said plurality of openings being associated with each trough to provide communication through said wall between a trough and said cavity; and
removable securing means positioned at the open sides of said troughs for at least partially securing said terminals thereby preventing undesired motion of said terminals, and for providing a supporting surface across said troughs to support said terminals and limit movement of said terminals away from said slot cavity when the printed circuit board is inserted into said slot cavity.

4,343,524

ZERO INSERTION FORCE CONNECTOR

Edward J. Bright, Elizabethtown; Larry E. Dittmann, Harrisburg, and Van K. Webster, Camp Hill, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 30, 1980, Ser. No. 164,199
Int. Cl.³ H01R *13/629*
U.S. Cl. 339—74 R **9 Claims**



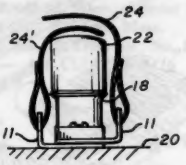
1. A connector for receiving a dual in-line package or the like having a plurality of leads extending therefrom, said connector comprising:
a. a lower housing of insulating material having a plurality of spaced apart cells opening upwardly on the top surface;
b. an upper housing of insulating material slidably mounted on the top surface of the lower housing and having a plurality of spaced apart openings extending vertically therethrough;
c. a plurality of resilient contact members having first and second arms in facing arrangement and hinged together at a lower portion thereof with the second arm being removably biased against the first arm, said second arm having a top portion with laterally extending free ends and a generally S-shaped intermediate portion providing at least one torsional axis said contact members being positioned in the cells of the lower housing with the first arms held immobile and with the laterally extending free ends on the second arms being coupled to the upper housing so that upon sliding the upper housing, the second arms are pulled away from the first arms and the intermediate portions twist about the one or more torsional axes thereby storing energy useful for exerting compressive forces on leads which may be inserted between the first and second arms through the openings in the upper housing.

4,343,525

ELECTRICAL PANEL CONNECTOR HOLD-DOWN ADAPTER

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Continuation-in-part of Ser. No. 128,108, Mar. 7, 1980, abandoned. This application May 1, 1980, Ser. No. 145,621
Int. Cl.³ H01R 13/62
U.S. Cl. 339—75 P 6 Claims



1. An apparatus for holding electrical cable connectors to electrical panel connectors which are attached to a mounting surface, the electrical connectors having first and second opposite sides, the apparatus comprising:

two identical metal bracket means, said bracket means each having two angularly related sides, a first of said sides having at least a first elongated cutout and the second of said sides having two apertured extensions with each extension located at the outer extremity of said second side and in the plane of said second side, said second sides of both of said bracket means being intended to be fastened to the mounting surface by means of the apertures in said extensions, said first side of one of said bracket means being positioned generally parallel to the first side of at least one panel connector and the first side of the other of said bracket means being positioned generally parallel to the second side of said at least one panel connector whereby the apertures in said extensions may be superimposed and intercepted by common fasteners when said apparatus is fastened to a mounting surface; and

strap means, said strap means passing through cutouts in the said first sides of both bracket means, said strap means being positioned over and in contact with a cable connector, said strap means being temporarily secured to itself and cooperating with said bracket means for holding the cable and panel connectors in engagement, said strap means being divided into two sections, said first section having a plurality of loops and said second section having a plurality of cooperating hooks.

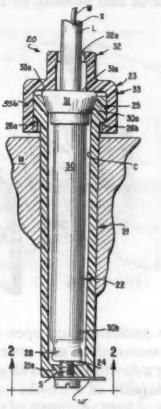
4,343,526

QUICK DISCONNECT ASSEMBLY

Ervin J. Hobson, Chicago, and William J. Leitmann, Northbrook, both of Ill., assignors to Hobson Bros., Inc., Chicago, Ill.

Filed Feb. 6, 1980, Ser. No. 119,163
Int. Cl.³ H01R 13/54
U.S. Cl. 339—90 R 5 Claims

1. A quick disconnect assembly for use in a high voltage circuit, comprising an elongated housing of insulative material provided with a longitudinally extending cavity closed at one end and open at the opposite end, a segment of the cavity adjacent the open end being tapered with an enlarged end and a narrow end, the latter being disposed closest to the cavity closed end, a fixedly mounted first electrical contact disposed within the cavity adjacent the cavity closed end and having a portion thereof disposed on the housing exterior, said housing being provided with an external collar encompassing the cavity open end, said collar having a first surface closest to the cavity closed end, a second surface farthest removed from said cavity closed end, and a side surface connecting the first and second surfaces and being provided with at least one elongated external groove interconnecting the first and second collar surfaces and extending in a direction substantially parallel to the longitudinal axis of said housing, the collar first surface being provided with a substantially annular cam commencing from an end of said groove; an elongated unit in slidable engagement within said housing cavity, said unit including an elongated insulated electrical lead with a first portion thereof disposed within the cavity and a second portion thereof extending substantially longitudinally from the cavity open end, a second electrical contact carried on said lead first portion and in abutting engagement with said first electrical contact, a sleeve of substantially inflexible insulative material slidably encompassing said lead first portion, one end of said sleeve engaging said second electrical contact and a second end of said sleeve terminating between the narrow and enlarged ends of the tapered cavity segment upon the unit being initially assembled in the housing cavity, and a resilient seal piece snugly and slidably encompassing a section of the lead proximate the tapered cavity segment; and a cover member slidably and rotatably encompassing the lead second portion and being initially movable substantially axially of the housing and subsequently movable simultaneously rotatably and axially of said housing to effect locking of said cover member on said external collar, said cover member during the initial axial movement being guided by said groove exerting a first compressive force on said seal piece forcing the latter against the second end of the sleeve and effecting a first predetermined abutting force between said first and second electrical contacts, and during the subsequent simultaneous rotational and axial movement of the cover member being guided by said cam whereby said cover member exerts a greater compressive force on said seal piece increasing the abutting force between said first and second electrical contacts, said seal piece being in sealing engagement with the tapered cavity segment when said cover member and housing portion are in locking relation.



4,343,527

TELEPHONE CONNECTING DEVICE

Patrick C. Harrington, Edgewood, Md.; Milton I. Levin, Langhorne, Pa.; Walter H. Shope, Fallston, and Max K. Wilson, Cockeysville, both of Md., assignors to Western Electric Company, Inc., New York, N.Y.

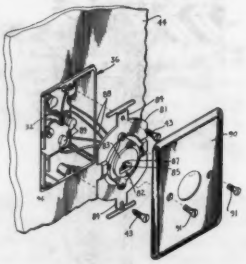
Filed Apr. 29, 1980, Ser. No. 145,194
Int. Cl.³ H02B 1/10
U.S. Cl. 339—125 R 12 Claims

1. A receptacle which is adapted to be mounted within a wall and which is adapted to interconnect terminals of a modular plug with conductors of a service cable within the wall, said receptacle comprising:

a housing which is made of a dielectric material, said housing having a base with side walls projecting from the periph-

ery of said base and an open side which is opposite to said base, means for mounting said housing to a structural support member within the wall, and means for mounting means for enclosing said open side;

means attached to and disposed within said housing for establishing an electrical connection with each of a plurality of conductors of the service cable, said means including a plurality of pedestals, which are formed integrally with said housing with each having a free end between said base and said open side of said housing and each having an opening formed therein, and a plurality of terminals each of which is adapted to be moved into one of said pedestal openings to secure an end portion of one of the conductors of the service cable in engagement with the pedestal, each said terminal being formed with a headed end which maintains the end portion of a conductor in engagement with a pedestal and which is spaced from said base of said housing by the pedestal;



cover means for enclosing said open side of said housing;

a modular jack mounted on said cover means, said modular jack including a cavity for receiving the modular plug and including a plurality of wire-like contact elements which are adapted to engage terminals of the plug when the plug is inserted into said cavity; and

means disposed in said housing for connecting each of said contact elements of said jack which is mounted on said cover means to said means for establishing an electrical connection to connect said contact elements to the conductors of the service cable, said means for connecting each of said contact elements of said jack to said means for establishing an electrical connection with each conductor including a cap and a conductive member which is joined electrically to an associated contact element, each said cap being adapted to be snap-locked into engagement with the headed end of one of said terminals.

4,343,528

MODULAR INTERCONNECT SYSTEM

John E. Lucius, Harrisburg, and Leon T. Ritchie, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 25, 1980, Ser. No. 143,708

The portion of the term of this patent subsequent to Jan. 6, 1998, has been disclaimed.

Int. Cl.³ H01R *9/00, 13/50*

U.S. Cl. 339—198 G **6 Claims**

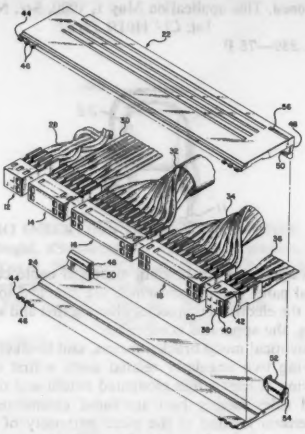
1. A modular electrical connector assembly comprising:

a plurality of housing modules each having a plurality of terminal passages extending from a rear end through said housing module to open on a front mating face,

each said passageway being fully enclosed at the mating face and forming an outwardly directed open channel shape at the rear end remote from said mating face;

a plurality of terminals each mounted in a respective one of said passageways, each said terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passageway and an insulation displacing rear portion lying in and accessible from said rear channel shaped portion; and

a pair of hermaphroditic cover members each having a forward end receivable in said enclosed portions of said passageways and intermating rear latching portions, said



cover members being of sufficient size to engage and enclose the rear ends of all of said plurality of modules,

whereby each module is used to terminate a specific cable and an assembly of modules is enclosed in a single pair of covers to form an integral connector unit of cables of different sizes and types.

4,343,529

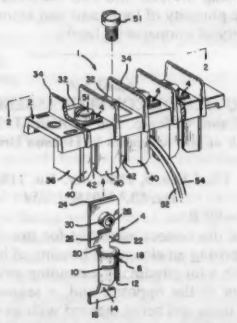
TERMINAL BLOCK WITH SELF LOCKING TERMINAL

Robert P. Reavis, Jr., Stateville, and Lawrence P. Weisenburger, Winston-Salem, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 19, 1980, Ser. No. 160,886

Int. Cl.³ H01R *9/16*

U.S. Cl. 339—198 R **5 Claims**



1. In a terminal block for commoning electricl wires or for providing a junction for plural conductors, and provided with an electrical terminal, having a hollow cylindrical barrel provided with a longitudinal open seam defining one or more sets of conductor engaging and gripping jaws, and a plate portion to receive a screw, and one or more projecting ears interfitting with said housing to prevent rotation of said barrel, the improvement comprising:

a portion of said plate interfitting in a slotted portion of said housig and spaced radially from said barrel a distance

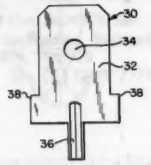
different than the radial spacing of each said ear from said barrel, an end of said barrel being radially outwardly flared and abutting a shoulder of said housing, and an opposite end of said barrel including a conductor receiving entry for said seam.

4,343,530

WAVE SOLDERABLE QUICK DISCONNECT MALE TERMINAL FOR PRINTED CIRCUIT BOARDS

Laurie J. Leger, Bradford, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 10, 1980, Ser. No. 110,881
Int. Cl.³ H01R *4/16*
U.S. Cl. 339—220 R **8 Claims**



1. A wave solderable terminal for making an electrical connection to a printed circuit board comprising:

A. a terminal blade having a base;

B. a V-shaped cross-section stem at said base of said terminal blade; and

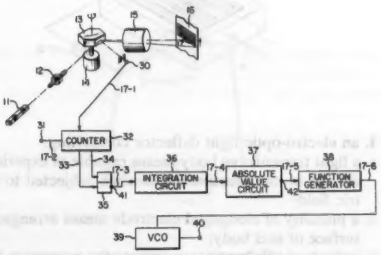
C. a portion of said base of said terminal blade adjacent to said V-shaped stem also having a V-shaped cross-section, wherein each side of said V-shaped stem is at an angle substantially equal to 90 degrees with respect to another side of said V-shaped stem and at an angle substantially equal to 45 degrees with respect to a surface of said terminal blade, and wherein said portion of said base is radiused at the top of said V-shape such that undue stress is not placed in said base.

4,343,531

LIGHT BEAM SCANNING DEVICE WITH CONSTANT SPOT INTENSITY AND SCAN SPEED RELATED MODULATING MEANS

Masamichi Tateoka, and Takao Tsuji, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,455
Claims priority, application Japan, Feb. 16, 1979, 54/16961
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.5 **4 Claims**



1. A light beam scanning device comprising:

(a) a deflector for deflecting an incident light beam in a predetermined direction;

(b) a scanning surface to be subjected to scanning by the light beam deflected by said deflector;

(c) an image forming optical system disposed between said deflector and said scanning surface for collecting the light beam deflected by said deflector and for forming an image on said scanning surface, and having a distortional coefficient of $\frac{3}{4}$;

(d) a light source section for supplying the light beam to said deflector; and

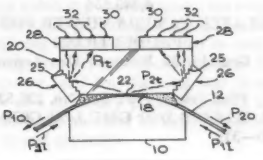
(e) modulation control means which emits a horologically long modulating signal when the light beam passes through a place away from the optical axis of said image forming optical system in comparison with that when the light beam passes in the vicinity of the optical axis of said image forming optical system.

4,343,532

DUAL DIRECTIONAL WAVELENGTH DEMULTIPLEXER

John P. Palmer, Pomona, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Jun. 16, 1980, Ser. No. 160,396
Int. Cl.³ H04B *9/00*
U.S. Cl. 350—96.19 **18 Claims**



1. A fiber optic dual directional demultiplexer for tapping off predetermined portions of multiplexed optical energy from a single optical fiber and demultiplexing the optical energy comprising:

a curved form for supporting an optical fiber and shaping a portion thereof to a predetermined segment of a circle;

a single optical fiber mounted on said form and capable of transmitting light in both directions along its axis;

means for affixing the optical fiber along a portion thereof to the curved portion of the form of a selected radius of curvature, the fiber and affixing means in the center section of the curved portion of the fiber being lapped and polished to a preselected depth of penetration into the fiber to develop a planar surface;

prism means having two faces of predetermined opposed characterisitc angles affixed to said planar surface in contact with the optical fiber and affixed thereto by means of an optically transparent adhesive, each face being effective to receive light travelling in a corresponding direction in said fiber and coupled out of said fiber;

light diffracting means formed on each of said prism faces positioned in the path of the coupled light exiting said fiber and effective to reflect and diffract signals incident thereto; and

plural photosensitive means positioned adjacent said prism to respond selectively to different wavelengths of light directed from the light diffracting means.

4,343,533

SOLAR RADIATION REFLECTOR WITH A CELLULOSIC SUBSTRATE AND METHOD OF MAKING

Cedric G. Currin, and Bernard Van Wert, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 31, 1980, Ser. No. 221,950
Int. Cl.³ G02B 5/10, 7/18
U.S. Cl. 350—288 10 Claims

1. As an article of manufacture, a solar radiation reflector consisting essentially of a laminate of

(A) at least one layer of a metal foil possessing a solar radiation reflective surface located on the outermost surface of

(B) a substrate composed of at least one layer of a cellulosic material selected from the group consisting of paper, paperboard, cardboard, fiberboard and combinations of two or more thereof,

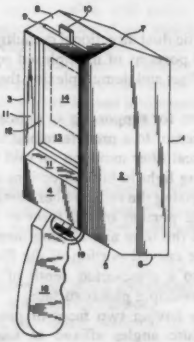
the reflective surface of said foil being coated with a weather-resistant protective coating and being faced away from the substrate, said (B) being impregnated with a sufficient amount of a weather-resistant cured polymer composition to render the cellulosic material suitable for use in outdoor applications, said impregnating polymer composition also serving as an adhesive to bond said foil to the substrate layer.

4,343,534

SIMULATED CAMERA VIEWER FOR VIDEO PRODUCTIONS

Kenneth A. Gruskin, 52 Blokland Dr., Longmeadow, Mass. 01106

Filed Feb. 2, 1981, Ser. No. 230,521
Int. Cl.³ G02B 5/00; G01C 3/00; G03B 13/12
U.S. Cl. 350—319 8 Claims



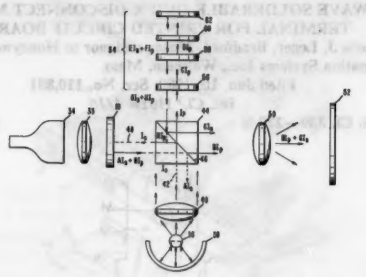
1. A viewer for simulating a camera having a front, a rear, a top, two sides, and a bottom, an opening in the front, a slot in the top parallel to the front opening, an opening in the rear, means circumscribing the opening in the rear whereby a person may place one of his eyes in front of said opening, a plurality of frame members, having a tab holder at the top thereof, each of said frame members having openings therein of a different size from the other frame members whereby when a frame member is placed in the slot in the top, it changes the size of the said opening in the front.

4,343,535

LIQUID CRYSTAL LIGHT VALVE

William P. Bleha, Jr., Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 14, 1979, Ser. No. 103,683
Int. Cl.³ G02F 1/135
U.S. Cl. 350—342 23 Claims



1. In a method for displaying an image wherein an input image modulates a polarized projection beam with a polarization modulation liquid crystal light valve to generate an output image, the improvement comprising the steps of:

(a) generating a beam of light;

(b) spatially grading the intensity of said beam;

(c) combining said spatially graded beam with said modulated projection beam to form a composite beam; and

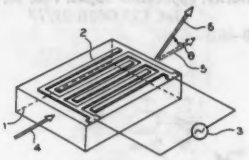
(d) projecting said composite beam with a lens onto a screen so as to superimpose said beam onto said output image and to thereby compensate for brightness non-uniformities in said output image.

4,343,536

ELECTRO-OPTIC LIGHT DEFLECTOR

Takaya Watanabe, and Teruo Matsuba, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed May 12, 1980, Ser. No. 149,274
Claims priority, application Japan, May 15, 1979, 54-59569; Nov. 14, 1979, 54-147418; Jan. 28, 1980, 55-8549; Feb. 27, 1980, 55-23542; Feb. 27, 1980, 55-23543; Feb. 27, 1980, 55-24383
Int. Cl.³ G02B 5/14
U.S. Cl. 350—355 22 Claims



1. an electro-optic light deflector comprising:

a. a light transmissive body means capable of experiencing a change in its refractive index when subjected to an electric field;

b. a plurality of elongaged electrode means arranged on the surface of said body;

c. at least one voltage source means for generating a predetermined voltage; and

d. means for applying said predetermined voltage to said electrodes to change the refractive index of said body means in at least one layer area defined by and adjacent to said electrodes, said refractive index changing in the thickness direction of said body which is perpendicular to

said electrodes, said refractive index change being such that a light beam incident to one end surface reaches the opposite end surface without coupling to the surface of said body which bears said electrodes;

whereby a light beam incident to one end surface of said body travels through said body in a direction generally aligned with said electrodes and is deflected in response to said predetermined voltage.

4,343,537

ELECTRO-OPTICAL CELL

Hans-Joachim Güntherodt, Witterswil; Peter Pfluger, Lucern, and Hans-Ulrich Künzi, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

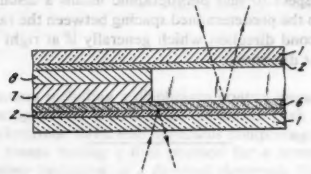
PCT No. PCT/CH79/00135, § 371 Date Jun. 18, 1980, § 102(e) Date Jun. 17, 1980, PCT Pub. No. WO80/00880, PCT Pub. Date May 1, 1980

PCT Filed Oct. 16, 1979, Ser. No. 195,143

Claims priority, application Switzerland, Oct. 18, 1978, 10777/78; Jul. 31, 1979, 7047/79

Int. Cl.³ G02F *1/17*

U.S. Cl. 350—357 **24 Claims**



1. An electro-optical cell which comprises a working electrode having electrically controllable optical properties, a counter-electrode, an electrolyte disposed between the two electrodes and means for applying an electric voltage or electric current to the cell, the working electrode having an intercalated graphite layer structure.

4,343,538

PROJECTOR

Ulf J. E. Astero, Tumba, Sweden, assignor to Asthausbolagen HB Astero & Stockhaus, Tumba, Sweden

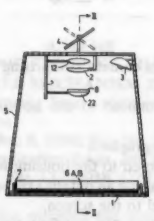
PCT No. PCT/SE79/00247, § 371 Date Jul. 23, 1980, § 102(e) Date Jul. 23, 1980, PCT Pub. No. WO80/01210, PCT Pub. Date Jun. 12, 1980

PCT Filed Dec. 6, 1979, Ser. No. 200,500

Claims priority, application Sweden, Dec. 6, 1978, 7812542

Int. Cl.³ G03B *21/08*

U.S. Cl. 353—64 **10 Claims**



1. A projector comprising a substantially horizontal table, projection optics arranged substantially centrally above the table, a light source which is located above the table and arranged to illuminate the table, a deflection mirror for substantially horizontal deflection of light radiating vertically upwardly from the table, and a light shaft which at least partly screens off the area between the optics and the table from the surroundings, a covering arranged to selectively lie upon the table surface, one of an upwardly facing surface of the laid-out covering and an upper surface of the table is light-absorbing while the other is is arranged to emit light vertically upwardly.

4,343,539

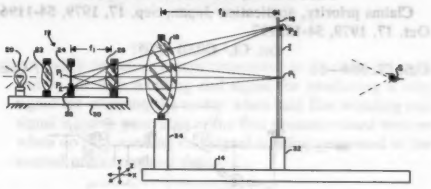
VIBRATION STABILIZED IMAGE PROJECTION SYSTEM

Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 3, 1981, Ser. No. 240,048

Int. Cl.³ A61B *3/00*; G03B *21/00, 21/24*

U.S. Cl. 353—122 **7 Claims**



1. A vibration stabilized image projection system, comprising:

(a) a platform subject to vibratory movement in X, Y and/or Z planes;

(b) an image viewing screen supported on said platform for undergoing vibratory movement therewith;

(c) an image projector supported off said platform in a relatively vibration-free environment for projecting an image toward said screen; and

(d) an image stabilizing lens interposed between said projector and screen for providing an optical link between them, said stabilizing lens being supported on said platform for undergoing vibratory movement therewith and relative to said projector, said lens focusing said image from said projector at a stationary position on said screen as said lens, screen and platform undergo vibratory movement relative to said projector.

4,343,540

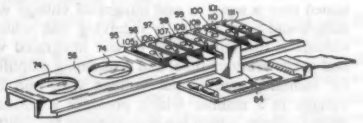
PLOTTING APPARATUS AND METHOD UTILIZING ENCODED OPTICAL MEANS

Henry F. Berdat, Manchester, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Feb. 17, 1981, Ser. No. 235,170

Int. Cl.³ G03B *41/00*

U.S. Cl. 354—4 **19 Claims**



1. A recording apparatus for generating images on a photosensitive material comrising:

light projecting means having a source of light and means for directing light rays in a beam from the source onto a photosensitive material;

optical means supported in the path of the light rays from the source and having light modifying means with adjustable characteristics for modifying the light rays directed from the source onto the photosensitive material;

control means connected to the optical means for adjusting the characteristics of the light modifying means;

encoding means associated with the optical means and including detectable indicia corresponding to the adjustable light modification characteristics of the light modifying means; and

detector means associated with the encoding means for sensing the detectable indicia and producing signals corresponding to the detectable indicia and the adjusted light modification characteristics of the light modifying means.

4,343,541

REFLECTION PHOTOMETRIC APPARATUS FOR CAMERA INCLUDING FOCAL PLANE SHUTTER

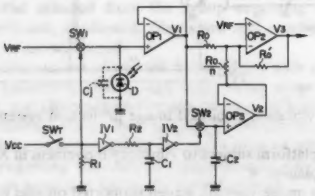
Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Jui. 21, 1980, Ser. No. 170,514

Claims priority, application Japan, Sep. 17, 1979, 54-119644; Oct. 17, 1979, 54-133992

Int. Cl.³ G03B *7/081*

U.S. Cl. 354—51 **17 Claims**



1. In combination with a camera of the type which includes a focal plane shutter, a reflection photometric apparatus comprising:

an integrating circuit including a photoelectric transducer element for sequentially measuring light reflected from a first blind and light reflected from a film surface of a film located in said camera and for generating a photometric output signal representative of the amount of light being received at any instant by said transducer element; said integrating circuit integrating said photometric output signal to provide an integrated voltage; and

a correction circuit for properly correcting said integrated voltage provided by said integrating circuit so as to compensate for a difference in reflectivity between said first blind and said film surface, said correction circuit including a sample-and-hold circuit for receiving said integrated voltage from said integrating circuit until a predetermined time after the initiation of a shutter operation and for subsequently maintaining said integrated voltage received at said predetermined time, said sample-and-hold circuit producing an output voltage which until said predetermined time is equal to said integrated voltage which said sample-and-hold circuit is receiving and which output voltage is thereafter equal to said integrated voltage at said predetermined time, and a summing amplifier circuit for summing said output voltage with said integrated voltage in a manner which provides a corrected integrated voltage which has compensated for a difference in reflectivity between said first blind and said film surface.

4,343,542

SMOOTHING DEVICE FOR SCAN LINES OF A PHOTOGRAPHED CRT DISPLAY

Roelof R. Jonker, Westminster, and Dennis A. Webb, Culver City, both of Calif., assignors to N.I.S.E., Inc., Cerritos, Calif.

Filed Jul. 6, 1981, Ser. No. 280,885

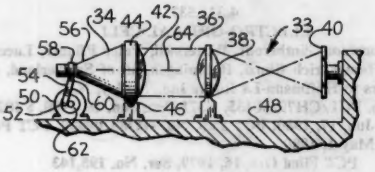
Int. Cl.³ G01D *9/42*; G03B *29/00*; H04N *5/84*

U.S. Cl. 354—76 **28 Claims**

1. A device to produce a photograph of an image represented by raster scans of variable intensity light having predetermined widths and predetermined spacing therebetween including:

a cathode ray tube having a face on which the raster scans of variable intensity light are produced thereacross in a first direction as its output representative of the image;

photographic means sensitive to the output of said cathode ray tube;



an imaging system to project the output of said cathode ray tube on said photographic means; and

mechanical means to move the output of said cathode ray tube with respect to said photographic means a distance about equal to the predetermined spacing between the raster scans in a second direction which generally is at right angles to said first direction.

4,343,543

MULTIPLE IMAGE ROLL FILM CAMERA

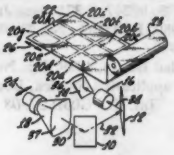
Otto M. Schiff, Irvine, and Vitolds Rikis, Mission Viejo, both of Calif., assignors to Schiff Photo Mechanics, Santa Ana, Calif.

Continuation-in-part of Ser. No. 157,674, Jun. 9, 1980, Pat. No. 4,285,587. This application May 19, 1981, Ser. No. 265,154

The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.

Int. Cl.³ G03B *29/00, 1/00, 27/42, 27/70*

U.S. Cl. 354—124 **31 Claims**



1. A multiple-image camera comprising

a camera housing,

an oscilloscope mounted to the housing having a screen forming

images to be photographed,

optical means mounted to the housing for transmitting light from the screen along an output axis behind the screen and generally parallel to the screen,

means for transporting film in a first direction perpendicular to said output axis, said means for transporting film comprising

a film spool supply mounted to said housing,

metering drive means for driving film across said output axis,

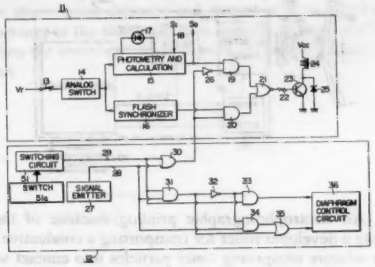
means for cutting film from said film spool supply, and

means for effecting relative shifting of said output axis and said film.

4,343,544
DIAPHRAGM CONTROL APPARATUS FOR COMBINED USE OF AN ELECTRONIC FLASH WITH A CAMERA

Kazunori Mizokami, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed Jul. 7, 1980, Ser. No. 166,078
Claims priority, application Japan, Aug. 22, 1979, 54-106932
Int. Cl.³ G03B 15/05, 17/18
U.S. Cl. 354—149 4 Claims



4. A camera including a diaphragm control apparatus, said camera being usable with a usual electronic flash or with a devoted electronic flash, said apparatus comprising:

switch means having a first position for a normal photographing operation or a devoted electronic flash operation, and a second position for a usual electronic flash operation;

a switching circuit for producing a first output signal indicative of a usual electronic flash being mounted on said camera and said switch means being in said second position;

a signal emitter for producing a second output signal indicative of a devoted electronic flash being mounted on said camera and said switch means being in either said first position or said second position;

a diaphragm presetting circuit responsive to receiving said first output signal only for producing a first diaphragm control signal and responsive to receiving said second output signal only for producing a second diaphragm control signal and responsive to receiving both said first and second output signals for producing said second diaphragm control signal; and

a diaphragm control mechanism responsive to said first or second diaphragm control signals from the diaphragm presetting circuit for establishing a diaphragm aperture corresponding to said first or second diaphragm control signals.

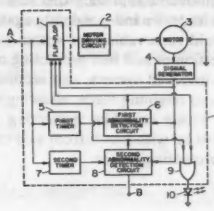
4,343,545
APPARATUS FOR STOPPING THE MOTOR OF A MOTOR DRIVE MECHANISM IN A CAMERA

Kenji Onogi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 8, 1980, Ser. No. 166,793
Claims priority, application Japan, Jul. 12, 1979, 54-95056[U]
Int. Cl.³ G03B 1/18
U.S. Cl. 354—173 12 Claims

1. An apparatus for stopping the motor of a motor drive mechanism in a camera of the type in which the motor is started upon the occurrence of a film winding start signal and is stopped in response to a film winding end signal being generated upon completion of a film winding operation, said apparatus comprising:

timer circuit means for generating a first timing signal a first predetermined time after said film winding start signal, said first predetermined time being selected such that it is before the time said film winding end signal is generated during normal operation of the mechanism, and for generating a second timing signal a second predetermined time selected to be after said time said film winding end signal is normally generated, and

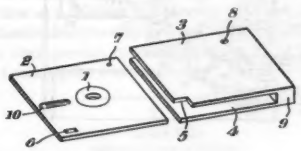


abnormality detection means responsive to the timing signals and to the film winding end signal for producing a stop signal for stopping the motor when said film winding end signal is being generated at the first predetermined time or when no film winding end signal is being generated at the second predetermined time.

4,343,546
LATCH MECHANISM FOR USE WITH REMOVABLE MEDIA

Roderick M. Urquhart, Fife, Scotland, assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 12, 1980, Ser. No. 120,818
Claims priority, application United Kingdom, Feb. 15, 1979, 7905387
Int. Cl.³ G03B 17/26; G11B 17/04, 23/02
U.S. Cl. 354—281 16 Claims



1. A camera system comprising:

removable film having a photosensitive sheet and encasing means for said photosensitive sheet, said encasing means surrounding said supporting said photosensitive sheet, said encasing means providing operational access of said camera to said photosensitive sheet;

film protecting means for containing and protecting said film wherein said film protecting means comprises an envelope of rigid material where said envelope fits over said removable film, said envelope protecting and containing said removable film and where said envelope is provided with an opening whereby said removable film may enter or be withdrawn, said removable film being retained in said film protecting means by friction, said film protecting means containing and protecting said film where on insertion of said film contained in said film protecting means into said camera said film is actively retained by said camera allowing independent withdrawal from said camera of said film protecting means and where on reinsertion of said film protecting means into said camera so as to contain said removable film and removable film is released by said camera being retained within said film protecting means on withdrawal of said film protecting means from said camera; and

second film retaining means comprising a first part situated on said encasing means and second part situated within said

camera, such that said first and second parts of said second film retaining means come together when said removable film is fully inserted into said camera, said second film retaining means on insertion of said film, enclosed within said film protecting means, into said camera providing a retaining force on said removable film such that said film protecting means may be withdrawn independently against said friction force, leaving said removable film within said camera and where on reinsertion of said film protecting means over said removable film into said camera, said second film retaining means provides no retaining force, allowing said removable film contained within said film protecting means by said frictional force to be withdrawn from said camera together with said film protecting means.

4,343,547

IMAGE FORMING APPARATUS

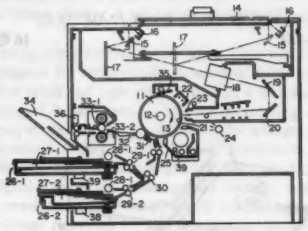
Nao Nagashima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

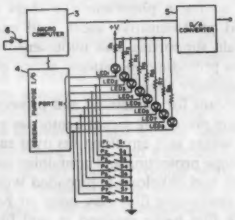
Filed Sep. 17, 1980, Ser. No. 188,230

Claims priority, application Japan, Sep. 26, 1979, 54-123631; Sep. 26, 1979, 54-123632

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **10 Claims**





8. A display apparatus, comprising:

an input-output circuit in which a same terminal is selectively usable for both data input and data output;

a switch for switching said terminal for data input or data output; and

a display circuit connected to said input-output circuit and adapted to interrupt the ordinary display function for effecting a display in response to the input data entered into said terminal when said terminal is switched for data input.

4,343,548

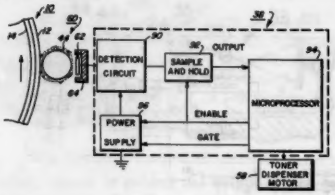
CONTROL SYSTEM FOR REGULATING THE CONCENTRATION OF TONER PARTICLES WITHIN A DEVELOPER MIXTURE

Jan Bares, Webster, and James C. Maher, Sodus, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 19, 1980, Ser. No. 151,234

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **16 Claims**



4. An electrophotographic printing machine of the type having a developer roller for transporting a conductive developer mixture comprising toner particles into contact with an electrostatic latent image recorded on a photoconductive surface so as to develop the latent image with the toner particles, wherein the improvement includes:

a probe disposed closely adjacent to the developer roller and in contact with the developer mixture;

means for producing a voltage difference between said probe and the developer roller including means for switching the polarity of the voltage difference between said probe and the developer roller;

means for detecting first and second currents flowing through said probe corresponding to the respective polarities of the voltage difference;

means, responsive to the detected current, for generating a control signal corresponding to the difference between the detected first current and detected second current;

means for storing a supply of toner particles; and

means, responsive to the control signal, for dispensing toner particles from said storing means into the developer mixture to adjust the toner particle concentration thereof.

4,343,549

BOX TYPE CONTACT PRINTER

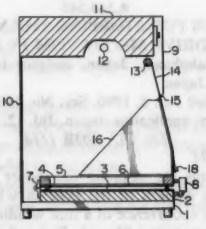
Yasuyuki Nanjo, Nishi, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 2, 1980, Ser. No. 193,351

Claims priority, application Japan, Oct. 9, 1979, 54-139771[U]

Int. Cl.³ G03B *27/04*

U.S. Cl. 355—113 **3 Claims**



1. A box type contact printer comprising:

(a) a lower frame and an upper, transparent frame positioned thereon, said frames being pivotally connected to each other at their rear ends so as to rotate from an open to a closed position so that a photosensitive material and an

original picture disposed thereon may be positioned between the frames when in open position; and

(b) a shield box for covering the frames including a top wall, a rear wall and two side walls defining a front opening which is adapted to be shielded by a roll-up, opaque sheet member, an exposure light source mounted in said box above the upper frame, wherein a side opening is defined in the lower front corner portion of at least one of the side walls of the shield box by means of a diagonally cut off section, and wherein an opaque, shield plate is mounted on the upper frame disposed and shaped so as to shield said openings in the side walls from leakage of exposure light when the lower and upper frames are in said closed position.

4,343,550

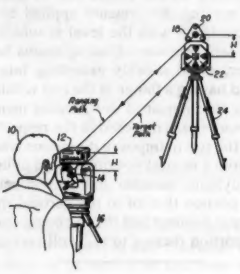
UNIVERSALLY ADJUSTABLE RANGING TARGET AND RETRO-REFLECTOR HOUSING BRACKET

Galen L. Buckley, 40 Ashwood, Irvine, Calif. 92714, and Harold W. Martin, 1848 Port Sheffield, Newport Beach, Calif. 92660

Continuation-in-part of Ser. No. 117,859, Feb. 4, 1980. This application May 27, 1980, Ser. No. 153,348

Int. Cl.³ G01C *3/08*

U.S. Cl. 356—5 **4 Claims**



1. A combined sighting target and bracket for receiving a retro-reflecting device for use in conjunction with remotely located electronic distance measuring instruments using a target line-of-sight path and a range measurement path, the combination comprising:

a yoke member having means for rotational engagement with a supporting tripod about an axis that is perpendicular to the surface upon which the tripod stands, said yoke member also having means for defining a target point fixed in space along a fixed axis parallel to said surface;

a tilting member having means for rotation relative to said yoke member about a second axis that is parallel to the surface upon which the tripod stands, and also having means for receiving said retro-reflecting device for elevational adjustment thereof; and

a slide member slideably interconnecting said tilting member to said yoke member for linear adjustment of the distance between said target point and said retro-reflecting device along said perpendicular axis.

4,343,551

APPARATUS FOR COUNTING AND CLASSIFYING PARTICLES

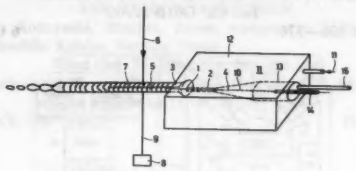
Wolfgang G. Eisert, Hanover, Fed. Rep. of Germany, assignor to Gesellschaft für Strahlen- und Umweltforschung mbH München, Munich, Fed. Rep. of Germany

Filed May 30, 1980, Ser. No. 155,131

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 2922643

Int. Cl.³ G01N *15/02, 21/01*

U.S. Cl. 356—335 **4 Claims**



1. In an apparatus for hydrodynamically focusing particles to permit counting and classification of the particles, which apparatus includes a flow nozzle terminating in a capillary nozzle that forms a thin stream containing the particles and having a circular cross section with the particles oriented along one axis of the thin stream, and a jacket pipe enclosing the capillary nozzle for providing an entraining stream for the thin stream of particles leaving the capillary nozzle, the improvement comprising: a further flow nozzle located downstream of said capillary nozzle and presenting a rectangular cross section for receiving the composite stream composed of the stream leaving said capillary nozzle and said entraining stream, and changing the composite stream cross section from circular to rectangular such that the stream exits from said further nozzle with a rectangular cross section; means directing a laser beam normally to one flat side of the rectangular cross section at a location downstream of said further nozzle; and a radiation detector disposed for detecting radiation resulting from impingement of laser radiation on particles in the stream of rectangular cross section.

4,343,552

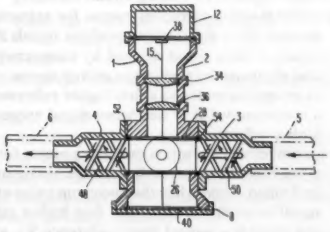
NEPHELOMETER

Frederick K. Blades, Boulder, Colo., assignor to PureCycle Corporation, Boulder, Colo.

Filed Dec. 28, 1979, Ser. No. 107,934

Int. Cl.³ G01N *23/00*

U.S. Cl. 356—339 **18 Claims**



16. In apparatus for the continuous monitoring of condition of a fluid, comprising optically transparent window means for the passage of light therethrough, and inlet passage means, the improvement which comprises helical flow diverter means disposed in said inlet passage for establishing a current

whereby a laminar layer is prevented from forming on said window means.

4,343,553

SHAPE TESTING APPARATUS

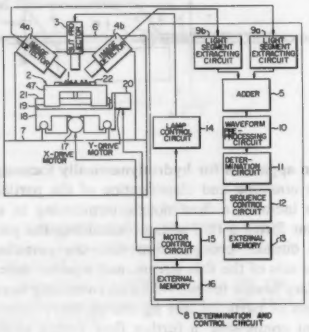
Yasuo Nakagawa; Hiroshi Makihira, both of Yokohama; Yoshitada Oshida, Fujisawa, and Nobuyuki Akiyama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

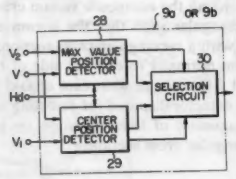
Filed Aug. 27, 1980, Ser. No. 181,768

Claims priority, application Japan, Sep. 3, 1979, 54/111706; Nov. 14, 1979, 54/146427; Aug. 6, 1980, 55/107193

Int. Cl.³ G01B *11/00*

U.S. Cl. 356—376 **6 Claims**





1. A shape detecting apparatus comprising:

(a) a slit projecting means for projecting a slit image on a three-dimensional object;

(b) a positioning means for positioning said three-dimensional object relative to said slit projecting means;

(c) an image pickup means for two-dimensionally scanning the slit image projected by said slit projecting means to pickup the image;

(d) a light segment extracting circuit including

a center position extracting means for extracting a mean position $(Z_1+Z_2)/2$ of two position signals Z_1 and Z_2 at which a video signal derived by transversely scanning said slit image by said image pickup means corresponds to or approximates to a first higher reference V_1 when a maximum value of said video signal exceeds said first higher reference V_1,

a maximum value position extracting means for extracting a position Z corresponding to the maximum value of said video signal when the maximum value of said video signal is no higher than said first higher reference V_1 and exceeds a second lower reference V_2, and

an erasing means for erasing the position signal of said video signal when the maximum value of said video signal is no higher than said second lower reference V_2; and

(e) a detecting means for detecting a shape of said three-dimensional object by analyzing the light segment position information derived from said light segment extracting circuit.

4,343,554

KNEADER FOR PARTICULATE TO GRANULAR MATERIALS

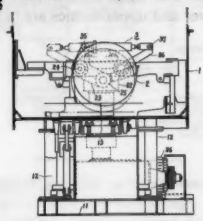
Koji Tawara, Mishima, Japan, assignor to Taiyo Chuki Co., Ltd., Osaka, Japan

Filed Apr. 7, 1980, Ser. No. 137,756

Claims priority, application Japan, Sep. 1, 1979, 54-120805[U]

Int. Cl.³ B28G *5/08*

U.S. Cl. 366—65 **6 Claims**



1. A kneader for particulate or granular materials comprising:

a container having the shape of a bottomed hollow cylinder;

a vertical shaft rotatably mounted in the center of the interior of the container;

roll carrier means having agitating rolls rotatably mounted thereon, said roll carrier means being pivotally mounted on the vertical shaft for causing said rolls to move upwardly or downwardly by pivotal movement of said roll carrier means; and

pressure adjusting means connected to said roll carrier means for varying the pressure applied to the agitating rolls in accordance with the level at which the rolls are positioned, said pressure adjusting means having a cylinder member, a rod slidably extending into the cylinder member and having a flange at the end within the cylinder for dividing the interior of the cylinder member into two chambers, and means disposed in the respective chambers for biasing the rod in opposite directions when said flange is moved from a neutral position in said cylinder member, one of the cylinder member and the rod being connected at one end portion thereof to the vertical shaft, the other of the cylinder member and the rod being connected at the other end portion thereof to said roll carrier means.

4,343,555

CHEMICAL PRINT ELEMENT

David D. Abbott, Downingtown, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 5, 1980, Ser. No. 146,684

Int. Cl.³ B41J *1/30*

U.S. Cl. 400—144.2 **13 Claims**

1. A print element for a serial impact printer for forming characters within a rectangular grid space having a length L and a width W on a document comprising:

a first set consisting of 52 character elements having the typeface configurations of the upper and lower case English language alphabet;

a second set consisting of 8 character elements having typeface configurations of upper case numerals from 2 through 9;

a third set consisting of 9 character elements having typeface configurations of the lower case numerals from 1 through 9;

a character element having a typeface configuration of a vertical line;

a character element having a typeface configuration of a horizontal line;

a first pair of character elements each having a typeface configuration of a horizontally disposed arrow, each arrow being oppositely disposed to the other and adapted to mate with said horizontal line;

a second pair of character elements each having a typeface configuration of a vertically disposed arrow, each arrow being oppositely disposed to the other and adapted to mate with said vertical line;

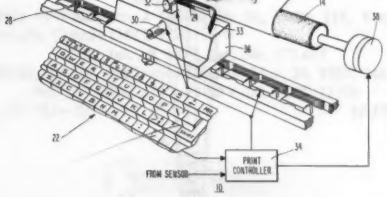
a third pair of character elements each having a typeface configuration of a diagonal line with slopes of plus and minus L/W respectively;

the character elements of said third pair each having a length slightly exceeding L/ sin θ, where θ equals arctan L/W, each passing through at least one corner of said grid space and extending to a diagonally opposite corner of said grid space; and

a fourth pair of character elements each having a typeface configuration of a diagonal line with slope of plus and minus L/2W respectively;

the character elements of said fourth pair each having a length slightly exceeding L/2 sin θ', where θ' equals arctan L/2w, each passing through at least one corner of said grid space and extending to an opposite side of said grid space substantially at a mid-point of said opposite side;

each of said character elements situated at the distant end of a separate spoke radially extending from a central hub.



13. A serial impact printing systems comprising:

a print element having

support means;

a set of character elements mounted on said support means in a character array, each of said character elements in said array adapted to be moved to and from a print position, said set including a subset having typeface configuration of lower case numerals;

at least one coded area mounted on said support means containing a code for identifying said print element;

drive means coupled to said print element for moving said character elements to and from said print position;

means for moving a copy medium lengthwise relative to said print element;

keyboard means for selecting particular ones of said set of print characters to be moved to said copy medium;

sensor means for sensing the coded area of said print element; and

print control means responsive to said sensor means and to said keyboard means and coupled to said moving means for controlling the lengthwise increment and movement of said copy medium relative to said print element whenever said code has been sensed by said sensor means and print characters from said subset have been selected by said keyboard means;

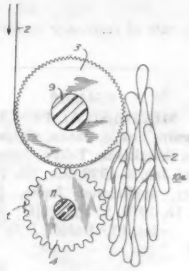
said means for moving said copy medium moving said medium lengthwise in discrete steps of a first magnitude corresponding to a line to line step and, when a character from said second subset has been selected, for moving said medium first in one direction in a step of a second magnitude less than said first to permit imprinting of said selected character of said subset in a position displaced lengthwise of said medium from adjacent imprinted characters and then returning said copy medium to its previous lengthwise position when said character element of said subset is moved away from said print position.

4,343,556

INK RIBBON CARTRIDGE

Takao Kobayashi, Shiojiri, Japan, assignor to Shinshuseiki Kabushiki Kaisha, Nagano, Japan

Filed Oct. 24, 1980, Ser. No. 200,184
Claims priority, application Japan, Oct. 26, 1979, 54-138545
Int. Cl.³ B41J *33/26, 33/10, 32/02*
U.S. Cl. 400—196.1 **21 Claims**



1. A ribbon cartridge for a printer producing characters on a recording media, comprising:

a feed roller of a first finite module mounted for rotation and having peripheral teeth of a first profile;

a pinch roller of a second finite module mounted for rotation and having peripheral teeth of a second profile, the teeth of said rollers being in engagement, said first and second modules being different;

a ribbon of extended length, said ribbon being interposed between said feed and said pinch rollers in the region of said engagement, whereby said ribbon is transported when said feed roller rotates.

4,343,557

SPACEBAR TOUCH CONTROL APPARATUS

Robert M. DuRoss, Huntsville, Ala., and Robert J. Stuhler, Mattydale, N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,271
Int. Cl.³ B41J *5/28*
U.S. Cl. 400—496 **16 Claims**

1. A typewriter space bar touch control apparatus comprising:

support frame means;

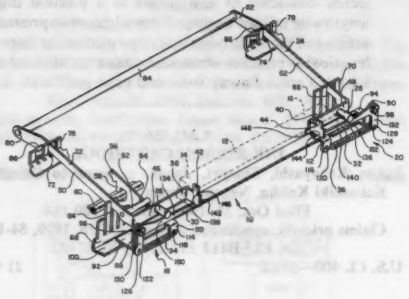
a pivoting member pivotally mounted on said support frame means and having a support portion;

spring means connecting said pivoting member and said support frame means and disposed to resist pivoting motion of said pivoting member;

space bar means supported by said support portion of said pivoting member, with initial motion of said space bar resisted by said spring means;

an engagement member mounted on said space bar means for motion with said space bar means and with said engagement member engaging an intermediate portion of said pivoting member, having a pivot radius less than that

of said support portion, responsive to motion of said space bar beyond said initial motion for causing an abrupt increase in the rate of resistance to further motion of said space bar.



4,343,558

MECHANICAL PENCIL

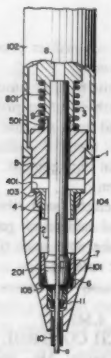
Masashichi Fujiwara, Tokyo, Japan, assignor to Yugen Kaisha Tokyo Kinzoku Seisakusho, Tokyo, Japan

Filed Jan. 8, 1980, Ser. No. 110,463

Claims priority, application Japan, Jul. 31, 1979, 54-105740[U]; Aug. 16, 1979, 54-113252[U]

Int. Cl.³ B43K *21/16*

U.S. Cl. 401—67 **1 Claim**



1. A mechanical pencil comprising:

a holder tube having a back end and a front end, and having an intermediate connecting piece located therein;

a hollow movable lead case having a back end and being positioned in the back end of said tube;

a lead chuck, said lead chuck having a back end movably fitted within said lead case and a front end in the front end of said tube, said back end of said lead chuck including a shoulder means;

a buffer spring having a first spring rate and being positioned between said shoulder means and the back end of said lead case to bias said shoulder means against the front end of said lead case;

a retraction spring having a spring rate less than said first spring rate and being located between said lead case and said intermediate connecting piece and compressible by movement of said lead case, said movement of said lead case moving said lead chuck towards said front end of said tube via the biasing of said buffer spring;

a movable fastening ring having a conical internal surface in the front end of said holder tube, said fastening ring being positioned so as to be engageable with said chuck for chucking said lead when said chuck is moved toward said front end of said tube; and

a buffer spring operating mechanism comprised of said front end of said lead case, the rear end of said intermediate connecting piece and a predetermined distance therebetween, wherein said engagement between said chuck and said fastening ring occurs at said predetermined distance, whereby said buffer spring operating mechanism causes said buffer spring to compress upon compression of said retraction spring due to said engagement between said chuck and said fastening ring so that the impact of engagement of said front end of said lead chuck with said fastening ring is buffered.

4,343,559

RETRACTABLE MECHANISM FOR A WRITING ELEMENT

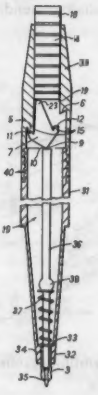
Derrick J. Silver, Letchworth, England, assignor to Platignum Limited, Great Britain

Filed Jun. 25, 1980, Ser. No. 162,991

Claims priority, application United Kingdom, Jul. 2, 1979, 7922832; Mar. 3, 1980, 8007188

Int. Cl.³ B43K *24/00*

U.S. Cl. 401—109 **6 Claims**



1. A retractable mechanism for a writing element comprising

a casing including a passage extending longitudinally therethrough and walls bounding said passage,

a plunger constrained to move in the longitudinal direction of said passage,

a pair of latch formations oppositely disposed on said walls of said passage when viewed in a plane normal to the longitudinal direction of said passage,

a latch member reciprocally displaceable in the longitudinal direction of said passage by said plunger,

a pair of laterally extending latch arms on said latch member oppositely directed and each disposed for engagement with a respective one of said latch formations,

one of said latch formations defining a forward projected position of the writing element and the other of said latch formations defining a rearward retracted position of the writing element,

a rearward extending limb on said latch member having faces extending convergently from said latch arms towards the rearward end of said latch member,

a forward end of said plunger contacting the rearward end of said limb upon a successive depression of said plunger into said passage, said forward end of said plunger having a linear surface generally normal to the direction of de-

pression and allowing freedom of lateral movement of said rearward end of said limb over said surface,

a pivot means at a forward portion of said latch member for engagement with a rearward portion of the writing element,

resilient bias means moving the writing element to produce a force on said pivot means laterally displaced from a force transmitted to said limb by said plunger when said plunger is depressed,

said plunger movable longitudinally forward a distance to move said latch member to release a said latch arm from an engaged said latch formation and position the other of said latch arms forward of the other of said latch formations,

said resilient bias means producing its said force sufficiently laterally displaced from said force from said plunger to move said latch member about said pivot means laterally to align said other of said latch arms with said other of said latch formations,

a point on each said latch formation for contact with a point on each said latch arm upon engagement of one of said latch arms with a respective one of said latch formations upon release of said plunger, with said points acting as a fulcrum about which said latch member moves, moving said rearward end of said limb laterally over said unobstructed surface of said plunger and moving a said converging face of said latch member against said wall of said passage contiguous with said engaged latch formation with said converging face of said latch member placed in sliding contact with said wall of said passage for a successive depression of said plunger.

4,343,560

SPIGOT JOINT

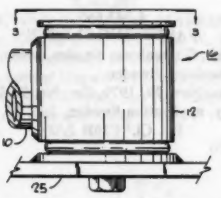
Wallace G. Chalmers, 2 Gloucester St., Suite 214, Toronto, Ontario, Canada (M4Y 1L5)

Filed Jul. 23, 1980, Ser. No. 171,651

Claims priority, application Canada, Mar. 26, 1980, 348350

Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*

U.S. Cl. 403—13 **10 Claims**



1. A spigot assembly for attaching a knuckle of a member of a vehicle to a relatively movable part of the vehicle via a bushing, the bushing having a bore and ends and being held within said knuckle, said spigot assembly comprising:

a spigot having a base arranged to be rigidly secured to said vehicle part and a tubular projection extending from said base, said projection having an outer end defining a first annular surface facing axially outwardly of the projection;

a tubular cap having on an inner end thereof a second annular surface in engagement with the first annular surface of said projection;

a centering and aligning means being located at the inner end of said cap to ensure registry of the first and second annular surfaces and alignment of the spigot and cap along a common axis;

bolt means extending within the aligned spigot and cap and fastening said spigot and cap together with said first and second annular surfaces tightly engaged with one another;

the centering and aligning means taking up the bolt forces and transmitting them to the cap part; and

said contacting first and second annular surfaces transmitting the bolt forces and any bending moments applied by the bushing to the cap part directly to the spigot part so that the bolt means is not subject to bending forces.

4,343,561

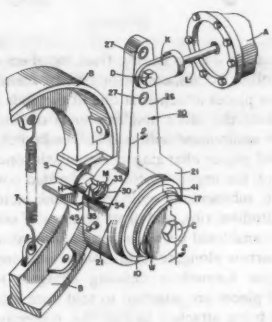
SLACK ADJUSTER

Sergio Campanini, 224 E. Miller Rd., Iola, Kans. 66749

Filed Nov. 3, 1980, Ser. No. 203,745

Int. Cl.³ F16C *11/00*; F16D *1/12, 3/00*

U.S. Cl. 403—97 **8 Claims**



1. A slack adjuster assembly for coupling a brake shaft to a power actuator to achieve rotation of the brake shaft about its axis when the actuator is moved, comprising:

(a) a bushing member surrounding the shaft and fixed thereto, the bushing member having an annular flange therearound and having a bearing surface around the bushing member and located adjacent to the flange which extends outwardly from the bearing surface at an annular shoulder;

(b) a lever having a hub member surrounding the bearing surface of the bushing member and journaled thereon, and the hub member having an annular shoulder disposed opposite to the annular shoulder of the bushing member, and the lever having an arm extending from its hub member and coupled to said actuator;

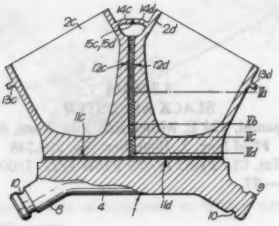
(c) an annular series of teeth carried by each of said shoulders, the respective series of teeth manually engaging when the hub member is displaced axially along the bearing portion so that said shoulders approach each other;

(d) spring means carried by the members and yieldable urging the hub member toward the bushing shoulder to maintain said series of teeth normally engaged;

(e) the shoulder of one of said members having a recess therein and having a bore extending from the recess outwardly of the member; and

(f) a pawl in the recess and having an adjustment shaft extending outwardly through said bore and operative to rotate the pawl in the recess; and the pawl having lug means engageable with a tooth of the series carried by the other of said members and operative when the pawl is rotated to force the shoulders apart against the spring means and to annularly shift said mutual engagement by one tooth.

4,343,562
JOINT FOR TRUSSES
Inge-Bertin Almeland, and Marc Lefranc, both of Oslo, Norway, assignors to A/S Akers Mek. Verksted, Oslo, Norway
Filed Dec. 19, 1979, Ser. No. 105,268
Claims priority, application Norway, Dec. 22, 1978, 784353; Dec. 3, 1979, 793921
Int. Cl.³ F16B 7/00
U.S. Cl. 403—171 11 Claims

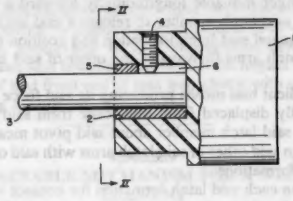


1. A joint for a truss having truss members constituted by pipe-like hollow bodies, comprising a core member, a plurality of transition pieces attached at one of the ends thereof to said core member, the other and free ends of said pieces being adapted for securement with said hollow bodies, the cross-sections of said pieces changing between said one and said free ends thereof, the improvement wherein said core member has an elongate, substantially cylindrical trunk including a plurality of longitudinal ribs, said cross-sections of said pieces being gradually transitional between annular formations at said free ends and narrow elongate formations at said one ends thereof, said elongate formations defining elongate surfaces along which said pieces are attached to said core member, pairs of said pieces being attached to said ribs, respectively.

4,343,563
TAPERED SPLINE AND METHOD OF MANUFACTURING SAME
James R. Bernhagen, Eldridge, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.
PCT No. PCT/US80/00578, § 371 Date May 16, 1980, § 102(e) Date May 16, 1980, PCT Pub. No. WO81/03296, PCT Pub. Date Nov. 26, 1981
PCT Filed May 16, 1980, Ser. No. 245,240
Int. Cl.³ F16B 11/00
U.S. Cl. 403—282 12 Claims

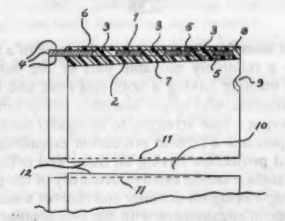
7. In a splined connection between a female member (7) and a male member (10), the improvement comprising a tapered spline (6) in the female member (7) capable of mating with a straight spline (9) on the male member (10).

4,343,564
ROTATABLE MEMBER RIGIDLY MOUNTED ON AN UNDERSIZE SHAFT
Roderick M. Francis, Garner, N.C., assignor to Stackpole Components Company, Raleigh, N.C.
Filed Feb. 17, 1981, Ser. No. 234,800
Int. Cl.³ F16D 1/06
U.S. Cl. 403—362 2 Claims



1. In combination, a rotatable shaft, a rotatable member provided with a cylindrical axial bore receiving one end of the shaft, the diameter of the shaft being materially less than the diameter of the bore, a set screw threaded in said member radially of said bore and projecting into the bore, and a cylindrical sleeve encircling the shaft in the bore and centering the shaft in the bore, the sleeve being provided with a longitudinal slot extending outwardly from its inner end, and said screw extending through said slot and tightly engaging the shaft to rigidly connect said rotatable member and shaft, said slot being wide enough to permit it to be moved along the projecting inner end of the screw when the sleeve is inserted in said bore.

4,343,565
FASTENING SLEEVE
Stig L. Hallerbäck, Gothenburg, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden
Filed Nov. 19, 1979, Ser. No. 95,580
Claims priority, application Sweden, Jan. 22, 1979, 7900526
Int. Cl.³ F16B 2/00
U.S. Cl. 403—370 9 Claims

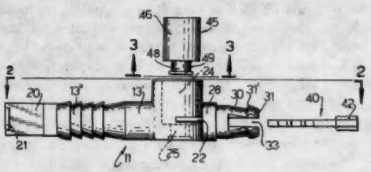


1. A fastening sleeve assembly engageable with a press fit in the annular space between confronting annular surfaces of two members comprising an outer elongated generally tubular housing element made of a plastic material having at least one peripheral surface which tapers from one axial end to the other, at least one generally cylindrical slotted inner body element made of pressed sheet metal encapsulated by said housing element and having an axial end portion which projects outwardly beyond one axial end of said housing.

4,343,566
CLAMPING DEVICE FOR RELEASABLY SNAP JOINING TWO PIECES OR PANELS

Fiorello Giovannetti, Via Marciano, 4, Milano, Italy

Filed Jan. 16, 1980, Ser. No. 112,565
Claims priority, application Italy, Mar. 23, 1979, 21246 A/79
Int. Cl.³ B25G *3/00*; F16D *1/00*; F16G *11/00*
U.S. Cl. 403—405 14 Claims



1. A jointing or clamping device for releasably snap joining two parts, comprising a plug element insertable into one of said parts, and a bush element insertable into the other of said parts, wherein said plug element comprises:

a stem or shank portion having a zone shaped for engagement with the walls of a hole formed in said one part;

a body portion connected to said stem portion;

a head portion connected to said body portion and formed with legs resiliently movable toward one another and defined by at least one longitudinal slit, at least a part of the slitted head portion protruding from said one part when said plug element is inserted in the hole in said one part;

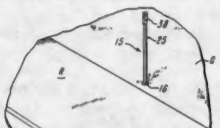
a notch extended from said longitudinal slit within said body portion;

a slider slidable from a position at least partially extended in said longitudinal slit between the said legs, thereat preventing said legs from resiliently flexing towards each other, and a retracted position in said notch wherein said legs are resiliently movable toward one another.

4,343,567
SELF-ERECTING ROADWAY MARKING POST

Robert B. Sarver, Carson City, Nev., and W. Eugene Arthur, Foster City, Calif., assignors to Robert D. Cunningham and Byron F. West, both of Hayward, Calif., a part interest to each

Filed Feb. 27, 1980, Ser. No. 125,244
Int. Cl.³ E01F *9/00*
U.S. Cl. 404—10 12 Claims

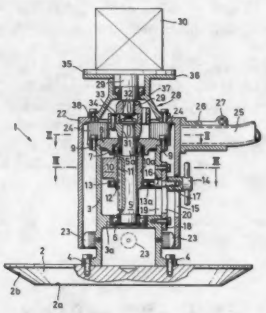


1. A self-erecting roadway marking post comprising an elongated flexible and resilient marking tube of plastics material and having an annular cross-sectional configuration, said marking tube having a lower end portion adapted to project downwardly into a hole defined within the ground and an upper portion projecting substantially above the ground, means no said upper portion of said marking tube for reflecting light, said upper portion of said marking tube being capable of bending above the ground through an angle of ninety degrees in response to being accidentally impacted by a motor vehicle, an elongated tube erecting member of resilient flexible material, said erecting member extending with said upper and lower portions of said marking tube and being completely surrounded by said marking tube, said erecting member having an intermediate portion disposed for bending within said marking tube when impacted by the motor vehicle, and said erecting member and the surrounding said marking tube being cooperatively effective to provide said marking post with a substantial number of self-erections in response to vehicle impacts on said marking post while minimizing the damage of said marking post.

4,343,568
ROAD GRADING AND TAMPING APPLIANCE

Benno Kaltenegger, Via Rasc 2a, Capione near Lugano, Italy

PCT No. PCT/EP79/00097, § 371 Date Aug. 11, 1980, § 102(e) Date Jun. 10, 1980
PCT Filed Dec. 7, 1979, Ser. No. 205,323
Claims priority, application Switzerland, Dec. 11, 1978, 12584/78
Int. Cl.³ E01C *19/38*
U.S. Cl. 404—133 14 Claims



1. Soil compaction and tamping apparatus having

a bottom plate (2) having an essentially circular bottom surface (2*a*);

a vertical support means (3, 22);

means (4) for securing the vertical support means to the bottom plate;

motor means (30);

and comprising, in accordance with the invention

means for applying a rocking or tilting movement to the bottom plate in a circular orbit of the bottom surface (2*a*) with respect to soil to be compacted comprising a rotatable shaft (5) extending in a vertical direction from at least approximately the center of the bottom plate, and drivingly coupled to the motor means;

and an eccentric weight or mass (10) secured to the rotatable shaft to revolve therewith, at a predetermined height above the bottom plate (2) to generate, upon rotation of the shaft, a force moment acting on the bottom surface of the bottom plate by the lever arm formed by the distance of the weight, or mass above said bottom surface plate and thereby effect said tilting of the bottom plate and wobbling and tilting motion thereof.

4,343,569
APPARATUS FOR PREVENTING BLOWING OUT OF THE WATER SUPPLY OF CONSTANT PRESSURE AIR STORAGE INSTALLATIONS OF GAS TURBINE POWER PLANTS

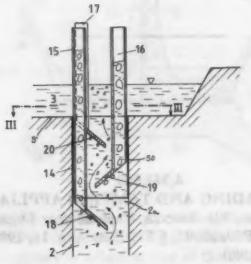
Alfred Schwarzenbach, Wettingen, Switzerland, assignor to BBC Brown Boveri & Co. Ltd.,, Baden, Switzerland

Filed Sep. 30, 1980, Ser. No. 192,375

Claims priority, application Switzerland, Dec. 14, 1979, 11088/79

Int. Cl.³ B65G *5/00*

U.S. Cl. 405—53 **5 Claims**



1. An apparatus for preventing the blowing-out of the water supply of constant pressure air storage installations of gas turbine power plants containing a subterranean cavern for the storage of the compressed air and connection lines between the cavern and a compressor and a gas turbine, respectively, a compensation basin, and a riser tube interconnecting the compensation basin with the cavern, the improvement which comprises:

a plurality of vent tubes;

each of said vent tubes having an upper end and a lower end;

the upper ends of said vent tubes, when mounted in the riser tube, extending beyond the highest water level of the compensation basin;

the lower ends of said vent tubes being offset with respect to one another in the lengthwise direction of the vent tubes; and

guide elements inclined with respect to the lengthwise axis of the vent tubes.

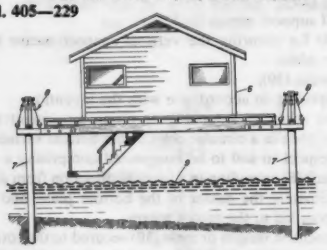
4,343,570
SELF-DRIVING SUPPORT ASSEMBLY

Charles R. Myer, II, 868 Hale St., Beverly Farms, Mass. 01915

Filed Feb. 6, 1980, Ser. No. 119,158

Int. Cl.³ E02B *17/00*; E02D *21/00*

U.S. Cl. 405—229 **25 Claims**



1. A self-driving support assembly for a structure over a penetrable substrate, said assembly comprising:

(a) a support member secured to said structure and having a passage therethrough;

(b) a column extending through said passage in said support member;

(c) a plurality of over two suspension members for suspending said structure from said column, each of said suspension members secured at its upper end to said column and at its lower end to said support member, and extending angularly and nonvertically from the axis of the column, the weight of said structure being applied to said column as tensile forces acting along said suspension members, the components of said tensile forces parallel to the axis of said column serving to drive said column into said substrate in a predetermined direction, and any net component of said tensile forces which is perpendicular to said axis serving to resist the movement of said column out of alignment with said predetermined direction; and

(d) first adjusting means operatively associated with said suspension members for adjusting the relative magnitudes of the tensile forces in each suspension member, to return to the predetermined direction of said column

whereby, by adjusting the magnitude of the tensile force to maintain the predetermined direction, the column is self-driven by the weight of the structure into the penetrable substrate.

4,343,571
REINFORCED EARTH STRUCTURES

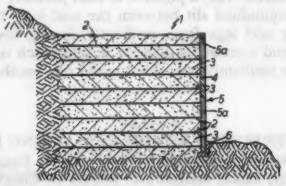
Derrick I. Price, London, England, assignor to Soil Structures International Limited, London, England

Filed Jul. 12, 1979, Ser. No. 56,916

Claims priority, application United Kingdom, Jul. 13, 1978, 29712/78

Int. Cl.³ E02D *29/02*

U.S. Cl. 405—284 **20 Claims**



1. A structure comprising a mass of particulate material and stabilizing members, said structure having at least one pair of opposite sides each member being elongated relative to its width with at least some of said members being integrally connected to each other and extending in zig-zag fashion in a substantially horizontal plane between opposite sides of the structure, the members being arranged in vertically spaced layers separated by layers of particulate material, said members being made of flexible material which is substantially unresilient, and means tensioning said members separately and independently of any tension exerted thereon by said particulate material.

4,343,572
APPARATUS AND METHOD FOR ANCHORING THE RIGID FACE OF A RETAINING STRUCTURE FOR AN EARTHEN FORMATION

William K. Hilfiker, Eureka, Calif., assignor to Hilfiker Pipe Co., Eureka, Calif.

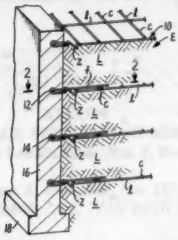
Filed Mar. 12, 1980, Ser. No. 129,602

Int. Cl.³ E02D *29/02*

U.S. Cl. 405—284 **5 Claims**

1. In a retaining structure for an earthen formation wherein longitudinally extending anchoring elements are embedded in the formation and a substantially rigid face member is supported on a foundation at the face of the formation and secured to the anchoring elements; the improvement comprising de-

formable zigzag sections in the longitudinally extending elements, said sections being located only adjacent the face member and being elongatable with destruction thereof to permit relative movement between the face member and portions of said elements spaced from the face member in response to relative movement between the formation and the face member, while maintaining a secured connection between the elements and face member to maintain the face member in place at the face of the earthen formation, said portions spaced from the face member comprising the majority of the anchoring elements and being so placed as not to move in the absence of movement of the formation within which they are embedded.

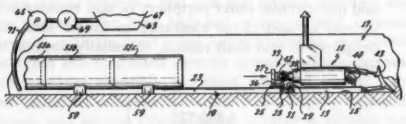


4,343,573

METHOD AND APPARATUS FOR MAKING AN UNDERGROUND PIPELINE

Thomas K. Breitfuss, 17541 Orange Tree La., Tustin, Calif. 92680

Filed Aug. 18, 1980, Ser. No. 178,894
Int. Cl.³ E02D *29/10*; E02F *5/10*
U.S. Cl. 405—155 **18 Claims**



1. A method of forming a pipeline which is at least partially underground and which includes, at least during construction of the pipeline, a plurality of inner component sections at least partially enclosed by a formable outer component, said method comprising:

providing an apparatus for at least assisting in installing the inner component sections with such apparatus being on a surface which is to support the pipeline;

depositing a first of the inner component sections on at least a portion of said apparatus;

at least partially supporting the first inner component section on the apparatus;

providing inner component section supporting means with such supporting means being supported by said surface;

forcing the first inner component section at least partially from the apparatus to the supporting means to transfer at least some of the support of the inner component section to the inner component section supporting means;

depositing a second of the inner component sections on said apparatus;

repeating said step of forcing for said second inner component section; and

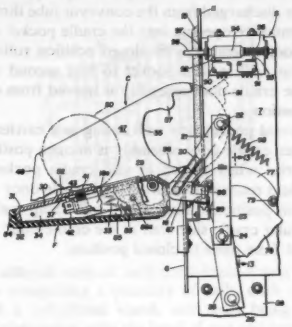
placing the outer component at least beneath the first component section subsequent to said step of forcing for the second inner component section.

4,343,574

PNEUMATIC TUBE SYSTEM CUSTOMER TERMINAL CONSTRUCTION

Walter G. Anders, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed Jun. 5, 1980, Ser. No. 156,690
Int. Cl.³ B65G *51/26*
U.S. Cl. 406—13 **34 Claims**



1. In a single conveyor tube banking service pneumatic tube system of a type having a conveyor tube extending between a teller terminal and a remote customer terminal supplied with vacuum or pressure from system blower and air shifter units to transport a carrier between such terminals; the improvement in which the customer terminal includes:

(1) walls forming a terminal housing, and an access opening formed in one of the housing walls;

(2) means connecting a horizontally extending axis end of a system conveyor tube to an opening in another housing wall;

(3) a door, a cradle pivotally mounted on the door on a horizontal axis, the cradle-door assembly being pivotally mounted on the housing on a horizontal axis spaced from and parallel with both the cradle pivot axis and the conveyor tube axis to form a closure for the access opening movable between closed and open positions;

(4) the cradle having a bottom ramp wall, and having first and second spaced side walls and first and second spaced end walls projecting from the bottom ramp wall to form a cradle pocket on said ramp wall, said first side wall being located adjacent the cradle pivot axis and having a semicircular shape in cross section formed on an axis coinciding with the conveyor tube axis when the cradle-door assembly is closed, said cradle end walls being perpendicular to said semicircular side wall axis, a circular carrier entrance opening formed in said first cradle end wall on a center lying in the coinciding semicircular wall and conveyor tube axes when the cradle-door assembly is closed, and an opening of reduced size with respect to said carrier entrance opening formed in said second cradle end wall aligned with said carrier entrance opening;

(5) a clamshell-like closure member pivotally mounted in said housing having a generally semicircular wall extending in one direction from said pivot mounting and having an internal curved surface formed on a diameter approximating that of the inner surface curvature of said semicircular cradle side wall, the closure member pivot mounting being spaced from but parallel with the cradle-door assembly pivot axis, said closure member having a portion extending in a second direction from said pivot mounting engaging said semicircular cradle wall when the cradle-door assembly is closed, holding said closure member in position to complete the formation inside the housing of a tubular extension of said conveyor tube, and means biasing said closure member away from said tube extending posi-

tion when the cradle is disengaged from the closure member during opening movement of said cradle-door assembly;

(6) power means for moving the cradle-door assembly between open and closed positions;

(7) the cradle ramp wall extending downwardly at an angle with respect to the horizontal from said access opening when the cradle-door assembly is in open position;

(8) a carrier discharged from the conveyor tube through said carrier entrance opening into the cradle pocket when the cradle-door assembly is in closed position rolling along said ramp wall in said pocket to said second side wall when the cradle-door assembly is moved from closed to open position;

(9) said second pocket side wall acting as a carrier retainer wall when cradle-door assembly is in open position; and

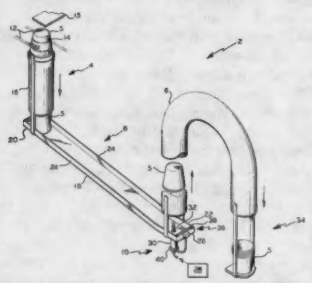
(10) a carrier when placed in said cradle pocket resting against said retainer wall when the cradle-door assembly is in open position rolling along said ramp wall to said semicircular cradle side wall as the cradle-door assembly is moved from open to closed position.

4,343,575

APPARATUS FOR TRANSPORTING CONTAINERS

Paul A. Kimball, Fulton, N.Y., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 16, 1980, Ser. No. 140,897
Int. Cl.³ B65G *51/02*
U.S. Cl. 406—19 **3 Claims**



1. Apparatus comprising:

(a) a first tubular member having an inlet and an outlet and an inside diameter sufficiently large to allow the passage of a container therethrough;

(b) a second tubular member having an upper end and a lower end and an inside diameter sufficiently large to allow the passage of the container therethrough;

(c) an inclined ramp having an upper end and a lower end with the upper end of the inclined ramp being in alignment with and beneath the lower end of the second tubular member and the lower end of the inclined ramp having an aperture therethrough which is in alignment with and beneath the inlet of the first tubular member; and

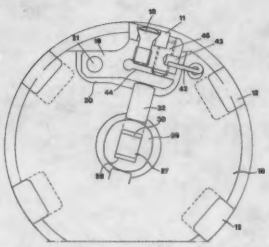
(d) a fluid source aligned with the aperture so that the aperture establishes a communication path between the fluid source and the inlet of the first tubular member.

4,343,576

BORING DEVICE

Kurt Lagerholm, Hirschberg-Grossachsen, Fed. Rep. of Germany, and Kurt H. A. E. Faber, Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Mar. 18, 1980, Ser. No. 131,372
Claims priority, application Sweden, Mar. 23, 1979, 7906920
Int. Cl.³ B73B *9/034*
U.S. Cl. 408—155 **14 Claims**



1. A boring device comprising:

a boring head,

at least one guide pad arranged on said head to abut and slide along the surface of a bore to be machined,

at least one insert holder mounted on said head for radial adjustment, and

adjustment means for said tool holder comprising:

a shaft,

means mounting said shaft for rotation within said head,

a bushing having a non-circular outer periphery mounted on said shaft for common rotation therewith, there being radial clearance between said bushing and shaft to enable said bushing to shift radially relative to said shaft, and

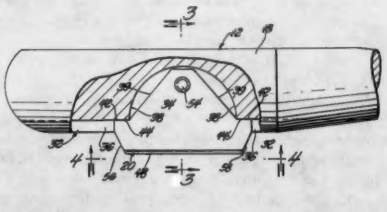
pushing means interposed between said insert holder and said non-circular outer periphery of said bushing in the vicinity of said radial clearance to follow said outer periphery as said shaft rotates, to radially position said insert holder.

4,343,577

DEBURRING TOOL

Jerome R. Purdon, 3677 E. Washington Rd., Carsonville, Mich. 48419

Filed Jul. 14, 1980, Ser. No. 168,051
Int. Cl.³ B23B *51/10*
U.S. Cl. 408—226 **7 Claims**



1. A deburring tool comprising an axially elongated tool holder having a longitudinal axis of rotation, said tool holder having a first body portion adapted for attachment to a rotatable driving means to rotate said tool holder about said axis and a second body portion extending axially from said first body portion and including seating means for seating a cutting blade, said first and second body portions being joined by a flexible neck portion allowing said second body portion to flex in cantilever fashion relative to said first body portion as said tool

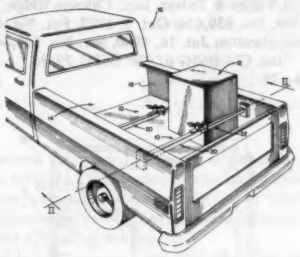
holder is rotated in use, said seating means comprising axially and radially inwardly extending slot means communicating with the exterior of said second body portion and having a pair of axially spaced radially outwardly facing seating shoulders, a cutting blade having a pair of axially spaced seating shoulders, and means for removably mounting said blade in said seating means with said seating shoulders of said cutting blade seated against said seating shoulders of said slot means.

4,343,578

LOAD BRACE STABILIZING ASSEMBLY

Burris P. Barnes, c/o Lee Richards, Rte. 5, Box 136, Tyler, Tex. 75706

Filed Jun. 6, 1980, Ser. No. 157,038
Int. Cl.³ B60P *7/08, 7/16;* **B61D** *45/00*
U.S. Cl. 410—151 **1 Claim**



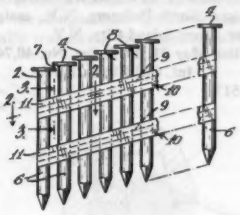
1. In combination, a pickup truck having a load bed and upstanding sidewalls on opposite sides of the load bed, a load resting on the load bed, and first and second stabilizer assemblies spanning the load bed and engaging said upstanding sidewalls, with the load being lodged between said stabilizer assemblies and restrained thereby against shifting movement, each stabilizer assembly including first and second tubular beam members coupled in mutually telescoping engagement wherein said second tubular beam member is slidable within said first tubular beam member; each tubular beam member having a plurality of elongated, substantially flat sides extending substantially the entire length of the assembly with one flat side engaging said load; load plates attached to opposite ends of the mutually coupled beam members, and a resilient pad attached to the load transmitting surface of each load plate engaging said upstanding sidewalls; a slip collar encircling said second tubular beam member and movable along said second tubular beam member to a position adjacent the end of said first tubular beam member, said slip collar being mounted on said second tubular beam member for limited pivotal movement with respect to the longitudinal axis of said second tubular beam member, whereby said slip collar is movable from a substantially upright position in which it is freely displaceable along said second tubular beam member to an inclined position wherein said slip collar is seized in binding engagement with said second tubular beam member; and, means mounted on the first tubular beam member for transmitting a driving force against said slip collar whereby compression loading is induced within said beam members as said beam members are driven into engagement with the opposite sidewalls of the load bed in response to the driving force, said driving means including a guide plate mounted on said first tubular beam member, and a lock bolt received in threaded engagement with said guide plate and being disposed for positive engagement with said lock plate to effect said driving force.

4,343,579

NAIL STACK

Lawrence S. Shelton, Morton Grove; Dieter G. Boigk, Skokie, and William L. Gabriel, Schaumburg, all of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed Sep. 7, 1979, Ser. No. 73,935
Int. Cl.³ F16B *15/00*
U.S. Cl. 411—442 **8 Claims**



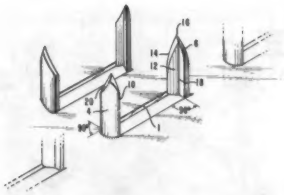
1. An adhered strip of nails for a rapid-acting driving tool magazine comprising a plurality of nails, each having a full head and a cylindrical shank, said nails being disposed in stepped relationship with the head of one nail being located in overlapping relationship with the head of an adjacent nail, and said shanks being spaced apart from each other to define an open area between adjacent shanks, means for connecting said nails to form a strip comprising at least one adhesive tape extending across a first portion of the shank of each adjacent nail and adhered to the nail shanks under tension in tangential contact therewith to keep the nails together, filament means having a width that is a fraction of the width of said tape and disposed under compression between said nail shanks and adhered to the tape to maintain the requisite spacing between said shanks while minimizing clogging problems and the shear force necessary to separate nails from the strip, which leaves said open area void of material other than said filament, said tape including a heat-responsive adhesive to provide a connection between said tape and said nails when said tape is pressure-applied to the nails while the nails are in a heated condition.

4,343,580

STRUCTURAL JOINT CONNECTOR

Anthony M. Moyer, Hollywood, and Robert H. Kelly, Miramar, both of Fla., assignors to Gang Nail Systems, Inc., Miami, Fla.

Filed Aug. 30, 1980, Ser. No. 71,551
Int. Cl.³ F16B *5/00, 15/00*
U.S. Cl. 411—468 **28 Claims**



1. A connector plate comprising a metal plate, said metal plate having: a plurality of pairs of elongated teeth struck from said metal plate so as to project in a direction substantially perpendicular to said metal plate; each of said pairs of teeth being struck from said metal plate so as to leave a corresponding longitudinally extending slot between said teeth of said pair of teeth; each of said teeth having a pointed tip; and each of said teeth having a knife edge portion extending from said metal plate, said knife edge portion of each said tooth have a cross-sectional thickness thinner than the remaining portion of said tooth and having a sharp edge with a cross-sectional angle

of less than 20° and said sharp edge of each said knife portion extending from said pointed tip of each of the respective said teeth along a continuous substantially arcuate path to said metal plate for facilitating penetration of each of said teeth into a member to which said connector plate is to be attached.

4,343,581

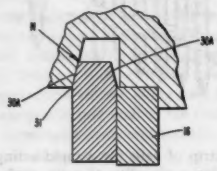
DOUBLE-BEVEL SPRING RETAINING RING

Melvin Millheiser, North Bellmore, N.Y., assignor to Waldes Kohinoor, Inc., Long Island City, N.Y.

Filed May 21, 1979, Ser. No. 40,748

Int. Cl.³ F16B *21/18*

U.S. Cl. 411—517 **6 Claims**



1. A spring retaining ring of the type adapted for assembly within a groove in a housing bore or shaft or the like, thereupon to form an artificial shoulder for axially locating a machine part, said ring comprising an open-ended ring body of spring material, said body including opposite side surfaces, each surface including a generally radial shoulder-forming portion and a groove-seating portion which is inclined at an acute angle relative to said shoulder-forming portion, either of said groove-seating portions being adapted to engage a correspondingly inclined wall of the groove to take-up axial play of the machine part, the length of each groove-seating surface portion being from 80% to 120% of the minimum groove penetration depth for said ring.

4,343,582

BANKNOTE DISPENSING APPARATUS

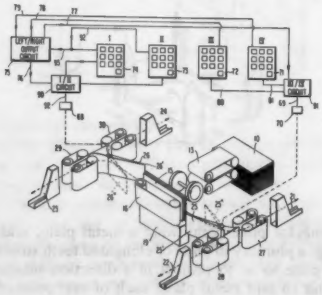
Leif J. I. Lundblad, Huddinge, and Jan-Olof Ek, Alvsjo, both of Sweden, assignors to Inter Innovation AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 950,115, Oct. 10, 1978, abandoned. This application Apr. 11, 1980, Ser. No. 139,525

Claims priority, application Sweden, Oct. 11, 1977, 7711412

Int. Cl.³ G07D *1/00*; B65H *3/04*

U.S. Cl. 414—32 **6 Claims**



1. An apparatus for dispensing an ordered number of banknotes from a banknote storage means to a customer, said apparatus comprising:

(a) a plurality of customer receipt openings;

(b) means for ordering a given number of banknotes to be dispensed from the storage means to a selected one of said customer receipt openings;

(c) first conveying means co-operating with said ordering means for feeding said ordered number of banknotes to at least one collector station;

(d) second conveying means co-operating with said first conveying means for feeding the banknotes located in the collector station to the selected customer station;

(e) switching means responsive to said ordering means for determining the direction of feed of said second conveying means such that said ordered number of banknotes is fed to the selected one of said customer receipt openings; and

(f) electronic devices for controlling the sequence of dispensing operations.

4,343,583

CONTINUOUS CHAIN STACKER/UNSTACKER

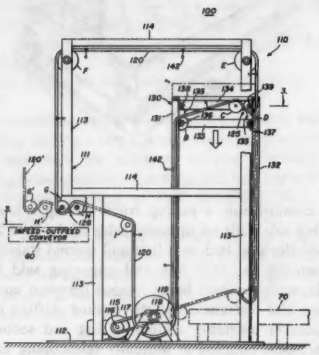
Maynard R. Euverard, Williamsburg, Va.; Henry A. Heide, Addison, and James J. Diver, South Holland, both of Ill., assignors to Velten & Pulver, Inc., Chicago Ridge, Ill.

Division of Ser. No. 839,456, Oct. 5, 1977, Pat. No. 4,303,365.

This application Jul. 16, 1980, Ser. No. 169,444

Int. Cl.³ B65G *67/04*; B65H *29/18*

U.S. Cl. 414—75 **11 Claims**



1. A machine for feeding articles into a stack and removing articles from a stack, said machine comprising a continuous conveyor for conveying articles to the top of the stack and away from the top of the stack, said conveyor being movable along a path which includes a transfer portion defining an arc of a circle, an article carrier mounted on said conveyor for rotation about the axis of a pivot which is fixed on said conveyor for movement therewith, the pivot axis being parallel to the axis of said circle and spaced from said conveyor path a distance equal to the radius of said circle so as to be coaxial with said circle when the adjacent part of said conveyor is in the transfer portion of the path, said carrier including a frame and magnetic means carried by said frame for movement with respect thereto between a support condition for supporting engagement with a magnetizable portion of an associated article and a release condition, said frame being engageable with the supported article when said magnetic means is moved to its release condition for releasing the article from said means, said transfer portion of said conveyor path being disposed adjacent to the top of the stack so that as the part of said conveyor adjacent to said carrier moves through said transfer portion of said path said carrier and any article supported thereby remain stationary in a transfer position at the top of the stack, and control means for causing said magnetic means and said release means to act between the support and release conditions thereof when said carrier is in the transfer position for deposit-

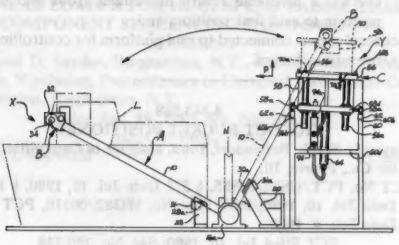
ing a conveyed article at the top of the stack or picking up an article from the top of the stack.

4,343,584

APPARATUS FOR SEQUENTIALLY TRANSPORTING CONTAINERS

Jerry L. Hudgins, Guntersville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 11, 1980, Ser. No. 168,944
Int. Cl.³ B65G *65/02*
U.S. Cl. 414—222 **13 Claims**



1. Apparatus for manipulating and sequentially transferring containers between a first station at which a container is loaded with silicon wafers and a second station at which said container is initially picked up empty and subsequently returned loaded, said apparatus comprising:

a movable arm member movable between said first and second stations;

a gripping device carried adjacent an end of said arm for picking up and securely gripping said container in a stable manner for transportation thereof;

said second station processing a plurality of said containers in sequence including a fixed pickup position from which said containers are picked up individually;

pedestal means upon which said containers are placed having variable positions for supporting said containers individually for pickup and return at said pickup position;

means for properly positioning said containers at said pickup position on said pedestal means for positive engagement by said gripping device of said arm member;

carriage means supporting said pedestal means;

said carriage means being movable between first and second positions to vary said position of said pedestal means and place said containers individually at said pickup position; and

said pedestal means including an elevator platform for supporting a first individual container and lowering said container below the level of a second container when said second container is placed at said pickup position by said carriage means, means, said lowered container affording access for engagement of said second container by said gripping device of said movable arm member.

4,343,585

ARTICLE HANDLING METHODS INCLUDING REORIENTING RANDOMLY MISORIENTED ARTICLES

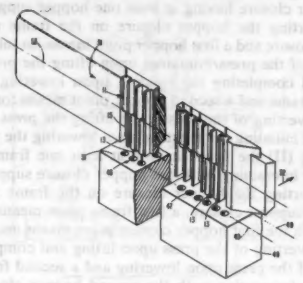
Anthony Tedeschi, Raytown, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed May 5, 1980, Ser. No. 146,719
Int. Cl.³ B65B *1/04*
U.S. Cl. 414—403 **10 Claims**

1. A method of handling a plurality of randomly oriented, elongated articles, each of such articles having nonuniform magnetic properties including a region of least magnetic reluctance which is longitudinally offset from the center of such article, comprising:

linearly arranging such articles in substantially parallel alignment and with a random longitudinal orientation of said nonuniform magnetic properties in either one of two mutually opposite directions;

subjecting each of the linearly arranged articles to a magnetic field which is concentrated in a linear region along said linearly arranged articles and is oriented in a direction parallel to the longitudinal extent of such articles for longitudinally translating such arranged articles and for



drawing such region of least magnetic reluctance of each such article in the one or the other of the two mutually opposite directions toward the concentrated region of said field, whereby ends of the articles of relatively greater magnetic reluctance extend away from such linear arrangement in the one or the other of said mutually opposite directions;

transferring to a magazine those of the articles extending in the one longitudinal direction;

reversing the longitudinal orientation of the remaining articles; and

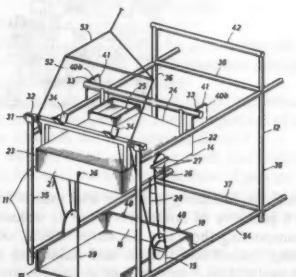
transferring such remaining articles to the magazine.

4,343,586

DUMPING APPARATUS AND METHOD

Othel D. Easley, Jr., Houston, and Merlin G. Hoiseth, Alvin, both of Tex., assignors to Reactor Services International, Inc., Alvin, Tex.

Filed Sep. 24, 1980, Ser. No. 190,347
Int. Cl.³ B65G *65/34*
U.S. Cl. 414—414 **20 Claims**



1. An improved container dumping apparatus comprising a container press and a press frame adapted to hold the press where (I) the container press comprises a bottom container support closure and a top container hopper closure, (a) the bottom container support closure having a back, bottom and

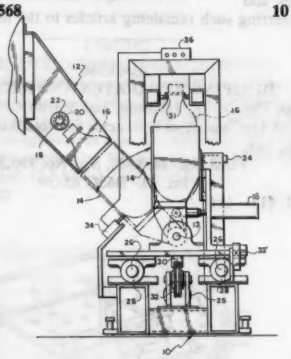
two sides, each side of the support closure having a line or cable attachment means for attaching a line or cable, a support closure pulley below the cable attachment means and a channel stop means, forming a channel next to the support closure pulley, located at the pulley's side closest to the back of the container support closure for securing the cable on the pulley and stopping the press rotation, the hopper closure having a front, back, two sides, and a top, the top being conical or pyramidal and having at its highest point a valve means for emptying the hopper closure, each side of the hopper closure having a hopper closure pulley, and a cable or line guide means for securing the line or cable to the hopper closure pulley; (b) the hopper closure having at least one hopper support means for supporting the hopper closure on the frame above the support closure and a first hopper pivot means for initiating the inverting of the press/container upon lifting the press off the frame and completing the righting upon lowering the press onto the frame and a second hopper pivot means for completing the inverting of the press upon lifting the press off of the frame and initiating the righting upon lowering the press onto the frame; (II) the frame having at least one frame support means for interacting with the hopper closure support means and supporting the hopper closure on the frame above the container support closure, a first frame pivot means for interacting with the first hopper closure pivot means and initiating the the inverting of the press upon lifting and completing the righting of the press upon lowering and a second frame pivot means for interacting with the second hopper closure pivot means for completing the inverting of the press upon lifting and initiating the righting of the press upon lowering.

4,343,587

MACHINE FOR HORIZONTAL TRANSPORTATION OF CONTAINERS

Stephen H. Aidlin, West Hempstead, and Michael Tartokowsky, Rego Park, both of N.Y., assignors to Aidlin Automation, Inc., Brooklyn, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,597
Int. Cl.³ B66B *17/00*
U.S. Cl. 414—568 **10 Claims**



1. A machine including a frame and means for cyclically receiving a plurality of containers from an unloading station, and for transporting them to a discharge region, said discharge region being spaced apart from said unloading station by a predetermined distance, comprising in combination:

a platform connected to said frame, being operable in a first position thereof adjacent said unloading station for accepting said containers,

pivoting means, including pivotal movement means for tilting said platform from an upright position to a tilted position, and righting it from said tilted position to said upright position,

linear movement causing means for moving said platform between said first position and a position linearly spaced from said unloading station, said platform being pivotably movable after having accepted said containers by said pivotal movement means about an axis to a second position angularly spaced away from said unloading station, movable subsequently from said second position by said linear movement causing means linearly to a third position adjacent said discharge region for temporarily storing said containers thereat, said platform being operable thereafter by said linear movement causing means, and upon having temporarily stored said containers at said third position, to linearly move to a fourth position spaced away from said discharge region and similar to said second position, and operable thereafter by said pivotal movement means to execute a pivotable return movement from said fourth position to said first position, and

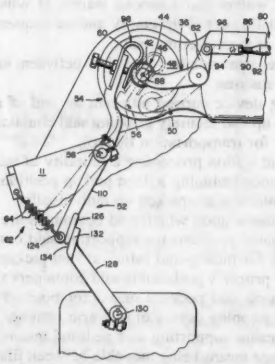
control means connected to said platform for controlling the operation thereof.

4,343,588

KICKOUT BUCKET POSITIONER

Wayne G. Styck, Bettendorf, Iowa, assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00885, § 371 Date Jul. 10, 1980, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO82/00310, PCT Pub. Date Feb. 4, 1982
PCT Filed Jul. 10, 1980, Ser. No. 250,748
Int. Cl.³ E02F *3/86*
U.S. Cl. 414—701 **7 Claims**



1. In an apparatus (19) having first (20) and second (11) members (20, 11) pivotally mounted relative to one another about a pivot axis (21), said first member (20) having first (32) and second (34) operating conditions, and having linkage means (30) for transmitting a mechanical signal across said pivot axis (21), said linkage means (30) having a first link structure (36) pivotally mounted relative to said first member (20) and defining a generally circular cam surface (42), said first link structure (36) being pivotable to first (48) and second (50) positions (48, 50) relative to said first member (20) and a second link structure (52) having first (54) and second (56) positions (54, 56) and being pivotally mounted relative to said second member (11), said second link structure (52) defining a coacting surface (60) which said cam surface (42) contacts with said first link structure (46) in its first position (48) to define said first position (54) of said second link structure (52), means (62) for moving said second link structure (52) to its second position (56) in response to movement of said first link structure (36) to its second position (50) and mechanical signal originating means (66) for moving said first link structure (36) to its first (48) and second (50) positions (48, 50) in response to said first member (20) being respectively in said first (32) and second

(34) operating conditions (32, 34), the improvement comprising:

a roller (44) having a center (88) and being mounted at said center (88) to said first link structure (36), said roller (44) defining said cam surface (42);

a generally U-shaped member (98) having a pair of legs (100, 102) having outfacing sides (104, 106) and being mounted to said second link structure (52), one (106) of said outfacing sides (104, 106) defining said coating surface (60); and

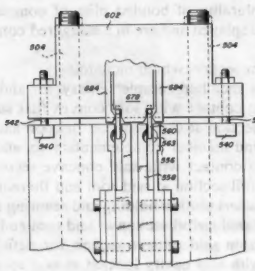
means (122) for adjusting said one side (106) of said generally U-shaped member (98) tangentially and radially relative to said roller (44).

4,343,589

LINEAR LOADER FOR HIGH SPEED RADIAL LEAD COMPONENT SEQUENCING AND INSERTING MACHINE

Michael D. Snyder, Binghamton, N.Y., and Crawford A. Matson, Wyalusing, Pa., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Apr. 18, 1980, Ser. No. 142,136
Int. Cl.[3] B65G *25/04*
U.S. Cl. 414—751 6 Claims



1. An apparatus for cyclical transfer of radial lead components from a receive position laterally to a discharge position, said apparatus comprising:

pusher means for engaging a component;

pusher support means for supporting said pusher for forward and return lateral travel parallel to a centerline;

clamping means attached to a laterally movable carriage for clamping said component and moving with said pusher during a portion of said foward and return travel of said pusher;

stop means for halting forward travel of said carriage while said pusher continues forward to push said component out of clamping engagement with said clamping means to said discharge position; and reciprocator means for providing different forward and return travel speeds to said pusher support means.

4,343,590

LOADER FOR A MACHINE TOOL

Elio F. D'Aloisio, East Hartford, Conn., assignor to Litton Industrial Products, Inc., New Britain, Conn.

Filed Sep. 17, 1980, Ser. No. 188,056
Int. Cl.[3] B65G *37/00*
U.S. Cl. 414—753 4 Claims

1. A loader for a machine tool comprising:

horizontal track means,

shuttle means mounted on said track means for relative horizontal displacement,

support means including

rigidly secured top, front and back walls, said front and back walls each including a pair of horizontally spaced bores,

a pair of shafts selectively sized for insertion into said bores, and

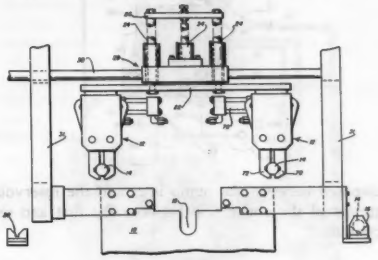
means for releasably securing said shafts to said front and back walls to define the bottom wall of said support means,

gripper assembly means including

first and second gear means each having a central bore for matingly receiving one of said shafts,

first and second gripper arm means each having a bore for matingly receiving one of said shafts,

means for rigidly securing said first and second gear means to said first and second gripper arm means, respectively,



hydraulic cylinder means having a housing including coaxial boss means extending outwardly from the front and back walls thereof and having a selectively advanceable rod means,

said first gripper arm means further including a slot at one end,

means for pivotally connecting the end of said rod means to the slotted end of said first arm,

said second gripper arm means including,

first and second portions defining a slotted end, each including a bore for receiving one of said bosses and,

means for releasably securing said first portion to said second portion, and

means for mounting said support means on said shuttle means for relative vertical displacement.

4,343,591

TURBOMACHINE SEAL SYSTEM

William F. Hannan, III, Pittsburgh, and Charles C. Czuszak, Greensburg, both of Pa., assignors to Elliott Turbomachinery Co., Inc., Jeannette, Pa.

Filed Dec. 26, 1979, Ser. No. 106,781
Int. Cl.[3] F01D *11/00*
U.S. Cl. 415—169 R 1 Claim

1. A turbomachine seal system for preventing oil from migrating into a first portion of a turbomachine having process gas flowing therethrough comprising:

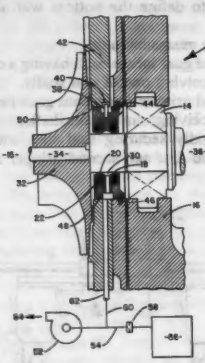
a first seal provided about a shaft of the turbomachine for limiting the flow of oil from a second portion of the turbomachine towards the first portion thereof;

a second seal provided about the shaft and axially spaced from the first seal for limiting the flow of process gas from the first portion towards the second portion of the turbomachine, said first and second seals defining an annular chamber therebetween;

lubrication means for supplying lubricant to the parts of the turbomachine requiring same, said lubrication means including a reservoir for storing lubricant and a pump for delivering lubricant from the reservoir; and

means connecting the lubricant pump to the annular chamber for reducing the pressure therein below the pressure in the first and second portions of the turbomachine for preventing oil from the second portion from migrating into the first portion, said means including a first conduit connecting the annular chamber with the inlet to the

pump, a second conduit connected to the first conduit extending to the chamber and a pressure reducing device



disposed between the pump inlet and the reservoir upstream of the connection between the first and second conduits.

4,343,592

STATIC SHROUD FOR A ROTOR

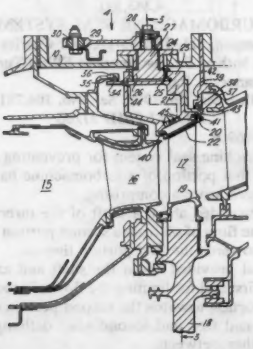
Gordon C. May, Allestree Park, England, assignor to Rolls-Royce Limited, London, England

Filed May 5, 1980, Ser. No. 147,269

Claims priority, application United Kingdom, Jun. 6, 1979, 7919728

Int. Cl.³ F01D *11/08*

U.S. Cl. 415—171 13 Claims



1. A static shroud for a rotor comprising an axially movable and tiltable shroud ring having a frusto-conical inner surface arranged to co-operate with a peripheral portion of said rotor to define a small clearance therebetween, and a plurality of actuators operatively connected to move the ring axially to vary said clearance in a predetermined manner, said actuators also being operatively connected to tilt said shroud ring out of a radial plane when necessary so as to compensate for eccentricity between said rotor and said ring.

4,343,593

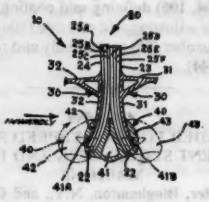
COMPOSITE BLADE FOR TURBOFAN ENGINE FAN

David J. Harris, Fairfield, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 25, 1980, Ser. No. 115,516

Int. Cl.³ F01D *5/30*

U.S. Cl. 416—193 A 7 Claims



1. A turbofan engine fan blade, comprising:

a. an airfoil section having a tip end, a root end, and a first and a second surface therebetween, wherein said first surface is essentially convex and said second surface is essentially concave, and wherein said airfoil section comprises a plurality of bonded plies of composite material which are splayed and are in a staggered condition at said root end;

b. a platform section which includes:

(1) a first member complementary to, and disposed in abutting contact with, said convex first surface of said airfoil section at said root end thereof; and

(2) a second member complementary to, and disposed in abutting contact with, said concave second surface of said airfoil section at said root end thereof; and

c. a metal outsert section holding and securing said platform section of said airfoil section at said root end thereof, and means within said outsert section for defining a cavity therein, with said cavity located at said root end of said airfoil section and simultaneously also positioned between said splayed and staggered plies of said plurality of plies of said airfoil section.

4,343,594

BLADED ROTOR FOR A GAS TURBINE ENGINE

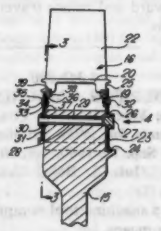
Derick A. Perry, Derbyshire, England, assignor to Rolls-Royce Limited, London, England

Filed Feb. 22, 1980, Ser. No. 123,776

Claims priority, application United Kingdom, Mar. 10, 1979, 7908517

Int. Cl.³ F01D *5/32*

U.S. Cl. 416—193 A 10 Claims



1. A bladed rotor for a gas turbine engine comprising a rotor disc having axially extending blade retention slots in its periphery, a plurality of rotor blades each having a root which engages with one said slot to support the blade and at least one annular assembly of sealing plates adapted to provide a seal

between the blade platforms and the disc, a retaining member associated with each said plate, each said retaining member extending through the plate and through that portion of the periphery of the disc lying between said blade retention slots, said retaining member assuming loads of its respective plate and distributing such loads across the thickness of said disc thereby eliminating localized stress build-up in said disc from the respective one of said plates and also eliminating loads from the respective one of said plates on said blades, said retaining member restraining the respective plate against axial, radial and circumferential motion.

4,343,595

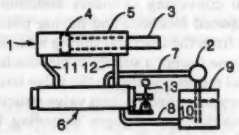
HYDRAULIC POWER BOOSTER APPARATUS

David L. Wells, 5077 Hwy. 45 S., and Allen M. Johnson, 5069 Hwy. 45 S., both of West Bend, Wis. 53095

Division of Ser. No. 752,630, Dec. 20, 1976, abandoned. This application Dec. 6, 1979, Ser. No. 100,860

Int. Cl.³ F04B *17/00*

U.S. Cl. 417—225 **12 Claims**



1. A hydraulic power apparatus including a power amplifying pump unit having a pumping means movable between first and second positions within a pump housing means, said pumping means having opposite sides and dividing the housing means into first and second pump chambers to the opposite sides of the pumping means, the pumping means having a larger cross-sectional area in the first chamber than in said second chamber, a fluid supply means connected to said first chamber, an exhaust means, a control means having an operating means coupled to said pumping means to form a first valve means between the opposite sides of the pumping means and movable with said pumping mean, a second and a third control valve means, said operating means including a valve operator movable relative to said pumping means to operate said first valve means and controlling said second and third control valve means in response to movement with said pumping means to control the movement of the valve operator and thereby opening and closing of said first valve means to supply fluid from the supply means to opposite sides of said pumping means and to exhaust fluid from the opposite sides of said pumping means, said second chamber includes a first portion adjacent the pumping means and an extension high pressure chamber of a reduced cross-section, said pumping means includes a power piston having a small area high pressure member disposed within said high pressure chamber, a passageway in said power piston connecting the first portion of the second chamber to said high pressure chamber, a check valve in said passageway, said second and third control valve means including a control valve body connected to the pump housing means, and said valve body having a stepped end recess defining an inner exhaust chamber an an outer control chamber of a greater area than the exhaust chamber, said control chamber forming an extension of said first chamber, said operating means including a plurality of interconnected pistons including an intermediate diameter spool projecting into said power piston and a small diameter spool located in said exhaust chamber and a large diameter spool in said control chamber.

4,343,596

CONSTANT FLOW RATE LIQUID SUPPLY PUMP

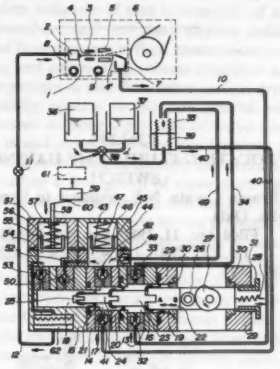
Yoichi Shimazawa, and Toshiaki Kawamoto, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 25, 1979, Ser. No. 51,395

Claims priority, application Japan, Jun. 29, 1978, 53/79865; Jun. 29, 1978, 53/79866

Int. Cl.³ F04B *25/00, 25/04;* **G01D** *15/00*

U.S. Cl. 417—252 **6 Claims**



1. A three-stage pump for an ink liquid supply system for an ink jet system printer, said ink jet system printer comprising a nozzle for emitting an ink liquid supplied from said ink liquid supply system and a beam gutter for collecting waste ink droplets emitted from said nozzle and for recovering the ink liquid toward said ink liquid supply system, said ink liquid supply system comprising:

an ink liquid reservoir for containing the ink liquid therein; and

a constant flow rate pump comprising:

a cylinder including at least a large diameter section, an intermediate diameter section and a small diameter section;

a reciprocating piston disposed in said cylinder;

at least two resilient sealing means disposed between said cylinder and said reciprocating piston for defining first, second and third variable volume pressure chambers;

a first inlet valve formed in said cylinder for communicating said first pressure chamber to said beam gutter;

a first outlet valve formed in said cylinder for communicating said first pressure chamber to said ink liquid reservoir;

a second inlet valve formed in said cylinder for introducing the ink liquid from said ink liquid reservoir into said second pressure chamber;

a second outlet valve formed in said cylinder for developing the ink liquid from said second pressure chamber;

a third inlet valve formed in said cylinder for introducing the ink liquid developed from said second outlet valve into said third pressure chamber;

a third outlet valve formed in said cylinder for communicating said third pressure chamber to said nozzle;

said piston being movable relative to said cylinder to vary the volume of said first, second and third variable volume pressure chambers to pump ink liquid from said first pressure chamber through said first outlet valve, from said second pressure chamber through said second outlet valve, and from said third pressure chamber through said third outlet valve in a forward direction of piston reciprocation and for introducing ink liquid into said first pressure chamber through said first inlet valve, to said second pressure chamber through said second inlet valve, and to said third pressure chamber through

said third inlet valve in a reverse direction of piston reciprocation; and

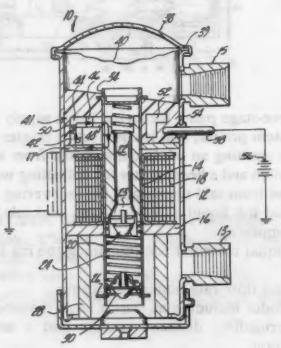
accumulator means operatively connected to said second outlet valve and said third inlet valve for maintaining a higher pressure in said third pressure chamber than the pressure in said second pressure chamber.

4,343,597

RECIPROCATING FLUID PUMP HAVING A HALL SWITCH

Ralph V. Brown, Cayuta, N.Y., assignor to Facet Enterprises, Inc., Tulsa, Okla.

Filed Apr. 11, 1980, Ser. No. 139,516
Int. Cl.³ F04B *17/04;* H02K *33/02*
U.S. Cl. 417—417 **13 Claims**



1. An electromagnetic fluid pump comprising:

an enclosed housing having an inlet port and an outlet port;

a non-magnetic cylindrical guide disposed in said housing defining a fluid flow path through said housing, said guide having one end proximate said inlet port and the other end proximate said outlet port;

a magnetically permeable hollow piston member disposed in said guide and free to reciprocate therein;

valve means for providing a unidirectional fluid flow through said guide proximate said outlet port;

biasing means for urging said piston member towards the end of said guide proximate to said outlet port;

solenoid coil means disposed concentrically about said guide for moving said piston member towards the end of said guide proximate said inlet port against the force of said biasing means;

magnetic circuit means disposed adjacent to the end of said guide proximate said outlet port, said magnetic circuit means completed by said piston member when said piston member is at the end of its pumping stroke;

Hall effect switch means disposed in series relationship with said magnetic circuit means for generating a signal in response to the magnitude of the magnetic flux flowing through said magnetic circuit means; and

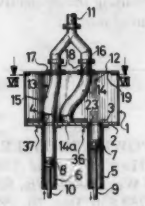
electronic switch means for energizing said solenoid means to move said piston member towards the end of said guide means proximate said inlet port in response to said signal having a predetermined magnitude.

4,343,598

VISCOUS MATERIAL PUMP, PARTICULARLY FOR CONCRETE

Friedrich Schwing, and Gerhard Schwing, both of Herne, Fed. Rep. of Germany, assignors to Friedrich Wilh. Schwing GmbH, Herne, Fed. Rep. of Germany

Filed Mar. 14, 1980, Ser. No. 130,438
Int. Cl.³ F04B *7/00, 15/02*
U.S. Cl. 417—517 **2 Claims**



1. An improved valve structure for a viscous material pump, said pump having a material reservoir, a pair of alternately operable material conveying cylinders communicating with the reservoir at spaced locations and having pistons for withdrawing material from the reservoir during a suction cycle and for discharging same during a supply cycle, discharge conduit means, and control means coupled to the valve structure and to the material conveying cylinders, said valve structure comprising a pair of movable swivel pipes extending between the conveying cylinders and the discharge conduit means, each of said swivel pipes having an opening movable over one of the conveying cylinders to receive the contents discharged therefrom and a plate movable over said conveying cylinder to block same, said plates being mounted on said pipes to extend away from each other in opposite directions, each of said swivel pipes being alternately movable by said valve control means to a first position between the spaced locations of the conveying cylinders and in which its associated conveying cylinder is open to said reservoir to receive viscous material therefrom during the suction cycle of the cylinder, to a second position moved outwardly from said first position toward its associated conveying cylinder such that its associated plate blocks said conveying cylinder during a portion of the supply cycle of the cylinder to precompress the viscous material, and to a third position outwardly from said second position such that said opening communicates with said cylinder for receiving the contents discharged therefrom during the remainder of the supply cycle.

4,343,599

SCROLL-TYPE POSITIVE FLUID DISPLACEMENT APPARATUS HAVING LUBRICATING OIL CIRCULATING SYSTEM

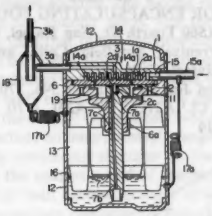
Hirokatu Kousokabe, Totsukamachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 12, 1980, Ser. No. 120,885
Claims priority, application Japan, Feb. 13, 1979, 54-14229
Int. Cl.³ F01C *1/02, 21/04;* F04C *18/02, 29/02*
U.S. Cl. 418—55 **10 Claims**

1. A scroll-type fluid displacement apparatus having a scroll-type fluid displacement means including a stationary scroll and a revolving scroll, an electric motor for driving said revolving scroll, a closed container containing said fluid displacement and said electric motor, and lubricating oil circulating means for said fluid displacement means, and means provided in in one of the stationary scroll and revolving scroll for enabling a pressure in the closed container to be maintained at a pressure intermediate a suction and discharge pressure of the apparatus, wherein said lubricating oil circulating means include:

means provided in said container and adapted for storing said lubricating oil;

a first lubricating oil passage opened at its one end into said lubricating oil stored in the lubricating oil storing means in said closed container and connected at its other end to the suction side of said scroll-type fluid displacement means so as to enable lubricating oil to be drawn into the scroll type



fluid displacement means and form a sealing oil film between the stationary and revolving scrolls;

a second lubricating oil passage connected at its one end to the discharge side of said scroll-type fluid displacement means and opening at its other end to the space inside said closed container; and

an oil separating means disposed at an intermediate portion of said second lubricating oil passage.

4,343,600

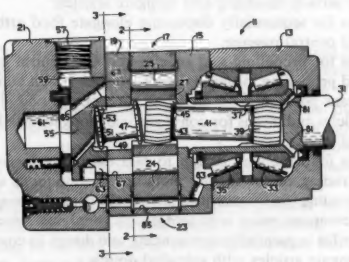
FLUID PRESSURE OPERATED PUMP OR MOTOR WITH SECONDARY VALVE MEANS FOR MINIMUM AND MAXIMUM VOLUME CHAMBERS

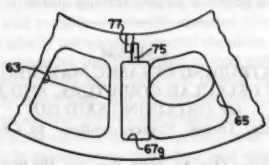
Clayton W. Thorson, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 4, 1980, Ser. No. 118,264

Int. Cl.³ F01C *1/10, 21/12;* **F03C** *2/08;* **F04C** *2/10*

U.S. Cl. 418—61 B **10 Claims**





1. A rotary fluid pressure device comprising:

(a) housing means defining fluid inlet means and fluid outlet means;

(b) an internal gear set associated with said housing means and including an internally-toothed member, and an externally-toothed member eccentrically disposed within said externally-toothed member for relative movement therebetween, the teeth of said members interengaging to define expanding and contracting volume chambers during said relative movement, one of said members having rotational movement about its own axis and one of said members having orbital movement about the axis of the other of said members;

(c) first and second relatively movable valve elements having respective first and second slidably engaging valve surfaces, one of said valve elements being movable in synchronism with one of said movements of one of said toothed members, said first valve element defining a plurality N of fluid passages in fluid communication with said expanding and contracting volume chambers and having passage openings in said first valve surface arranged circumferentially relative to the axis thereof, said second valve element defining a plurality of valve ports having openings in said second valve surface arranged circumferentially relative to the axis thereof, said plurality of valve ports including a first group of valve ports having constant fluid communication with said fluid inlet means, and a second group of valve ports having constant fluid communication with said fluid outlet means, at least a portion of said first valve element passage openings being in fluid communication with at least a portion of said second valve element port openings during said relative movement to direct fluid from said fluid inlet means to said expanding volume chambers, and to direct fluid from said contracting volume chambers to said fluid outlet means; and

(d) secondary valve means associated with at least one of said first and second valve elements and being operable to permit fluid communication between each of said volume chambers and a source of relatively lower pressure fluid, said permitted communication occurring as each volume chamber is at approximately its minimum volume position and fluid communication is blocked between the respective first valve element passage opening and both of the adjacent second valve element port openings.

4,343,601

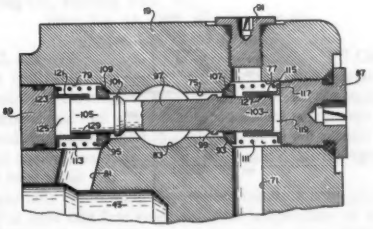
FLUID PRESSURE DEVICE AND SHUTTLE VALVE ASSEMBLY THEREFOR

Clayton W. Thorson, Edina, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 21, 1980, Ser. No. 142,493

Int. Cl.³ F01C *21/16;* **F03C** *2/08;* **G05D** *11/00;* **F16K** *31/122*

U.S. Cl. 418—61 B **9 Claims**



1. A rotary fluid pressure device, comprising:

(a) housing means defining a high pressure fluid port, a low pressure fluid port and a shuttle port;

(b) a fluid pressure actuated displacement mechanism including a movable member, said mechanism defining expanding and contracting fluid volume chambers during movement of said movable member, said movement of said member including a rotational component;

(c) output shaft means operable to transmit said rotational component of movement of said movable member;

(d) valve means disposed within said housing means, and cooperating therewith to define first fluid passage means providing fluid communication between said high pressure port and said expanding volume chambers, and second fluid passage means providing fluid communication between said low pressure port and said contracting volume chambers;

(e) shuttle valve means including means defining a shuttle bore in fluid communication with said shuttle port, a high pressure chamber in fluid communication with said first fluid passage means, and a low pressure chamber in fluid communication with said second fluid passage means, said low pressure chamber and said shuttle bore intersecting in a valve seat, said shuttle valve means including an axially movable shuttle piston assembly including a piston member having a first end normally extending into said high pressure chamber and a second end normally extending into said low pressure chamber;

(f) said shuttle valve means including dampening means disposed within said high pressure chamber and being radially movable therein, in a direction transverse to the longitudinal axis of the shuttle bore, said dampening means defining an interior surface adapted to receive said first end of said shuttle piston member and be closely spaced apart therefrom to define a dampening orifice therebetween, said interior surface of said dampening means and said first end of said shuttle piston member cooperating to define an included fluid pocket, the fluid pressure in said pocket being effective to bias said shuttle piston assembly toward a position in which said shuttle piston assembly is disengaged from said valve seat permitting fluid communication between said low pressure chamber and said shuttle port, and said dampening orifice providing substantially restricted fluid communication between said high pressure chamber and said fluid pocket.

4,343,602

GEAR WHEEL PUMP WITH REDUCED POWER REQUIREMENT

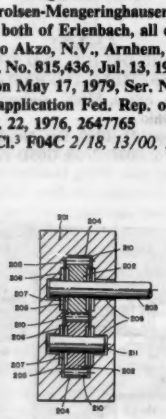
Volker Meywald, Arolsen-Mengeringhausen; Karl Ostertag, and Klaus Schneider, both of Erlenbach, all of Fed. Rep. of Germany, assignors to Akzo, N.V., Arnhem, Netherlands

Continuation of Ser. No. 815,436, Jul. 13, 1977, abandoned. This application May 17, 1979, Ser. No. 39,968

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1976, 2631341; Oct. 22, 1976, 2647765

Int. Cl.³ F04C *2/18, 13/00, 15/00*

U.S. Cl. 418—77 **17 Claims**



1. A gear pump with reduced power requirement for the conveyance of viscous liquids, especially thermoplastic fiber-forming polymers or a viscose spinning liquid, said pump comprising meshed gear wheels mounted rotatably on parallel shafts in a pump housing circumscribing the gear wheels with liquid inlet means leading into the meshing point where the gear wheels disengage and liquid outlet means leading away from the meshing point where the gear wheels engage, a normal pressuresealing gap space between the gears and the housing being enlarged by means of axial recesses in the side faces of the gears or in the adjacent internal facing surfaces of the gear housing which extend perpendicular to the gear axes, each of said enlarged axial recesses being formed only circularly or as a circular segment with each such circular recess being arranged concentrically to the axis of its gear wheel and extending radially inwardly up to a collar around the shaft of its gear wheel.

4,343,603

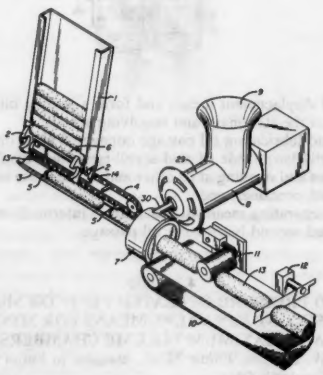
MACHINE FOR ENCAPSULATING FOOD IN DOUGH

Roger Pavlow, 1560 Fourth St., San Rafael, Calif. 94901, and Herman E. Frentzel, Kentfield, Calif., assignors to Roger Pavlow, San Rafael, Calif.

Filed Jul. 16, 1980, Ser. No. 170,312

Int. Cl.³ A21C *3/04;* **A23L** *1/10, 1/31*

U.S. Cl. 425—114 **5 Claims**



1. Apparatus for extruding dough about elongate food articles comprising:

an extruding means having means defining a central passage for serially receiving said elongate articles;

means for sequentially dispensing elongate food articles to said central passage;

means for propelling said articles into said central passage, said propelling means including an endless belt conveyor, means positioned for engaging each one of said elongate articles and means for conveyor said elongate articles into said passage;

means for supplying dough to said extruding means, said extruding means further including a continuous annular extruding port concentric about said central passage and in communication with said dough supplying means;

means for sequentially commencing said dough to cover said elongate articles with extruded dough;

means for sensing position of said elongate articles; and

means for severing said extruded dough about said elongate articles in response to said sensing means.

4,343,604

DIE FOR EXTRUDING CERAMIC MATERIAL TO FORM A BODY OF CELLULAR STRUCTURE, AND A METHOD OF OBTAINING SAID DIE

Louis Minjolle, Tarbes, France, assignor to Ceraver, Paris, France

Filed Oct. 14, 1980, Ser. No. 196,982

Claims priority, application France, Oct. 15, 1979, 79 25557

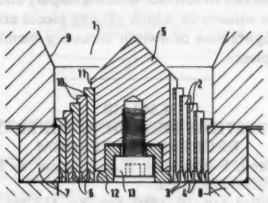
Int. Cl.³ B29F *3/00*

U.S. Cl. 425—192 R **10 Claims**

1. A die for extruding a ceramic material to manufacture a body of cellular structure, said die comprising a succession of elongated thin wall tubular coaxial components fitted one around another, said elongated thin wall tubular coaxial com-

ponents including integrally radial shoulders at their upstream ends projecting radially outwardly and overlying the upstream ends of the immediately adjacent tubular coaxial components radially outwardly thereof, means forming between successive radially adjacent components, longitudinal ducts, means defining annular ducts communicating with the downstream ends of said longitudinal ducts, the bottoms of said coaxial components being fitted, one around another, and having essentially radial notches level with the annular ducts, and the width of said notches being less than that of the longitudinal ducts, so that the ceramic material which flows through said longitudinal ducts is evenly distributed in the annular ducts and in the radial notches to form a body of cellular structure directly on extrusion, and wherein the coaxial components which are fitted one around another include an inner, central component bearing a radially outwardly projecting shoulder at the upstream end thereof overlying the upstream end of the immediately adjacent elongated thin wall tubular coaxial component with a succession of intermediate components radially fitted successively one around another from said central component up and to an outer radial component and wherein said outer radial component forms a support nozzle, and wherein said radial notches are provided exclusively at the downstream ends of said intermediate components.

8. A method of manufacturing a die for extruding a ceramic material to produce a body of cellular structure, said die comprising a succession of elongated thin wall coaxial components concentrically fitted one around another, successive radially adjacent components defining between them longitudinal ducts, annular ducts communicating with the downstream ends



of said longitudinal ducts, the bottoms of said coaxial components being fitted, one around another, and having essentially radial notches level with the annular ducts, and the width of said notches being less than that of the longitudinal ducts, so that the ceramic material which flows through the longitudinal ducts is evenly distributed in the annular ducts and in the radial notches to form a cellular structure directly on extrusion, said method comprising:

forming a radially outwardly directed shoulder on the upstream end of a first, inner tubular component,

forming an annular groove at the downstream end of said first, inner tubular component,

forming a series of longitudinal grooves at circumferentially spaced positions around the radial outer surface of said first tubular component extending the length thereof and through said radially outwardly directed shoulder,

forming a radially outwardly directed shoulder on a second tubular component and fitting said second tubular component concentrically about said first tubular component,

subsequently machining said second tubular component to provide an annular groove and longitudinal grooves analogous to those on said first component, and

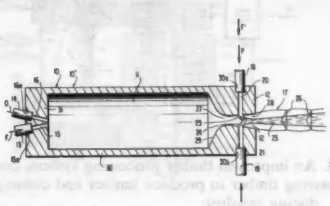
progressing in similar steps regarding said successive radially adjacent components to create said die capable of extruding a body of cellular structure directly from the downstream end of said die, and wherein said radial shoulders fix the positions of said succession of said elongated thin wall tubular coaxial components concentrically about each other while permitting free flow of ceramic material through said longitudinal grooves passing through said shoulders.

4,343,605

METHOD OF DUAL FUEL OPERATION OF AN INTERNAL BURNER TYPE ULTRA-HIGH VELOCITY FLAME JET APPARATUS

James A. Browning, Hanover, N.H., assignor to Browning Engineering Corporation, Hanover, N.H.

Filed May 23, 1980, Ser. No. 152,963
Int. Cl.³ F23C 5/00; F23M 3/02
U.S. Cl. 431—8 **3 Claims**



1. In a method of burning a primary fuel with an oxydizer within a combustion chamber bearing a venturi type jet nozzle at one end remote from the opposite end in which the primary fuel and oxydizer is ignited to form a flame jet exiting from the nozzle, and wherein small particles of metal or ceramic are fed radially to the venturi for particle spraying at jet velocity, the improvement comprising the step of:

reacting a secondary fuel with higher reactivity than that of said primary fuel with the "free oxygen" within the flame jet exiting from said burner to reduce oxidation of sprayed prticles and increase the static temperature of the flame jet bearing said particles.

4,343,606

MULTI-STAGE PROCESS FOR COMBUSTING FUELS CONTAINING FIXED-NITROGEN CHEMICAL SPECIES

David W. Blair, Princeton; William Bartok, Westfield, both of N.J.; John P. Longwell, Cambridge, and Adel F. Sarofim, Belmont, both of Mass., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 11, 1980, Ser. No. 120,651
Int. Cl.³ F23M 1/00
U.S. Cl. 431—10 **17 Claims**

1. A multi-stage process for combusting a fuel containing fixed-nitrogen chemical species which comprises the steps of:

(a) mixing said fuel which is preheated with at least one first oxidizing agent which is preheated in amounts such that the equivalence ratio of said fuel to said oxidizing agent is at least about 1.6;

(b) partially combusting the mixture resulting from step (a) in at least one first stage at a first temperature of about 1850° to about 2150° K., with a residence time of at least 0.03 second;

(c) mixing the combustion products resulting from step (b) with at least one second oxidizing agent in an amount such that the equivalence ratio of combustion products to the total amount of oxidizing agents in the mixture will be about 1.0 or less, such mixing taking place under nonadiabatic means such that the temperature of the mixture will not exceed about 1800° K.; and

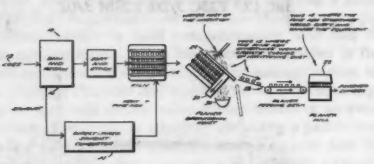
(d) completely combusting the mixture resulting from step (c) in at least one second stage at a second temperature of less than about 1800° K.

4,343,607

SPRAY SYSTEM FOR BREAKDOWN HOIST

Cecil A. Coleman, Thomasville, Ga., assignor to Balfour Lumber Company, Thomasville, Ga.

Filed Feb. 10, 1981, Ser. No. 233,112
Int. Cl.[3] F26B *9/12, 7/00*
U.S. Cl. 432—18 7 Claims



1. An improved timber processing system, comprising:
sawing timber to produce lumber and consequentially producing sawdust;
stacking the lumber in a multi-course pile with several generally parallel lengths in each course and adjacent courses are each spaced apart by a respective course of spacer sticks which run at generally right angles to the lengths of lumber in said adjacent courses;
placing the pile in a direct fired kiln;
collecting said sawdust and combusting the collected sawdust to produce an ash-laden hot gas stream, feeding the ash-laden hot gas stream to the kiln for kilning the lumber in said pile, whereby ash from the hot gas stream settles on the lumber during said kilning; and
removing the pile of kilned lumber from the kiln and breaking down said pile course-by-course and serially placing each course on a feeding deck to a downstream work station; and
spraying the pile of kilned lumber, as it is being broken down course-by-course with a fine mist of water from above, so that before each course leaves said pile substantially all the ash settled thereon during kilning has been wetted.

4,343,608

COMPOUND AND METHOD FOR PRESERVING DENTAL PULP

Milton Hodosh, 72 Overhill Rd., Providence, R.I. 02906

Filed Mar. 3, 1980, Ser. No. 126,433
Int. Cl.[3] A61C *5/02*
U.S. Cl. 433—224 5 Claims

1. The method of treating pulpitis so as to prevent abscess formation, comprising the following steps:
(A) removing any decay that exists
(B) capping the pulp with a viscous mixture that will harden to a cementlike consistency, the essential ingredient of said mixture being potassium nitrate
(C) permitting said mixture to substantially harden, and
(D) placing a permanent restoration over said mixture.

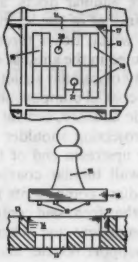
4,343,609

CHESS INSTRUCTION APPARATUS

David V. Cardinal, 1536 Applewood Rd., Mississauga, Ontario, Canada (L5E 2M3)

Filed Apr. 24, 1981, Ser. No. 257,337
Int. Cl.[3] G09B *19/22;* A63F *3/02*
U.S. Cl. 434—128 11 Claims

1. A chess instruction apparatus comprising:
means defining a playing area consisting of an array of playing squares,
each playing square containing a spacial configuration of switches, the configuration being the same in the square,
a plurality of playing pieces of opposing colors,
each playing piece providing a set of switch actuating members positioned to engage selected ones of said switches when the playing piece is placed on the square, the switch actuating members being arranged in a coded configuration corresponding uniquely to the color and function of the playing piece,
a display system consisting of a plurality of display circuits, each display circuit being assigned to a respective playing square and being operable to denote control of the square by a playing piece,
a circuit network controlled by said switches, said circuit



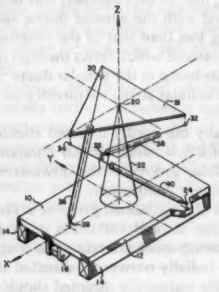
network providing a network of unidirectional current paths interconnecting said display circuits with a current supply,
said switches being selectively operable by said playing pieces for closing selected current paths through the network whereby to activate selected display circuits according to the squares on which playing pieces are placed and the configurations of switch actuating members of such playing pieces.

4,343,610

MOTION SYSTEMS PROVIDING THREE OR FOUR DEGREES OF FREEDOM

Richard C. Chou, Willingboro, N.J., assignor to The Franklin Institute, Philadelphia, Pa.

Filed Jan. 30, 1980, Ser. No. 116,956
Int. Cl.[3] G09B *9/08*
U.S. Cl. 434—58 15 Claims



1. A motion system capable of motion in three degrees of freedom, specifically roll, yaw and pitch, or any combination thereof, comprising:
a platform providing four points of connection at least three of which lie generally in a plane;
a support base providing three points of connection in another plane;
a support column extending from a generally center position in the base to a connection point in the platform and having coupling means permitting rotational movement of any type about that point;

three and only three powered and controlled extensible members, one each being connected between a different one of the remaining three connection points on the platform and a different one of the three connection points on the support base by joints permitting any relative movement between the extensible members but so that the extensible members within the limits of their movement must remain at acute angles to the platform so that the structure is a statically determined system; and

a control system for actuating the selective changes in the length of extensible members producing a motion.

4,343,611

MARINE PROPULSION

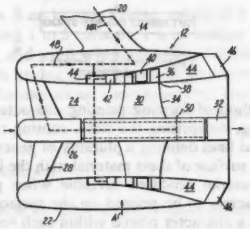
John L. Scott-Scott, Bulkington, England, assignor to Rolls-Royce Limited, London, England

Filed Dec. 27, 1979, Ser. No. 107,634

Claims priority, application United Kingdom, Jan. 5, 1979, 7900360

Int. Cl.³ B63H *11/08, 11/02*

U.S. Cl. 440—45 **8 Claims**



1. A marine propulsion unit comprising:

a housing;

a duct extending through said housing and through which water is capable of flowing, said duct having an open upstream end and an open downstream end;

a ventilated flow rotor rotatably mounted in said duct to cause water to flow through said duct;

an exhaust passage in said housing external of said duct, said exhaust gas passage having a downstream end adjacent to but separated from the downstream end of said duct;

combustion means arranged to receive a flow of compressed air and fuel, said combustion means communicating with said exhaust gas passage;

a velocity compounded impulse turbine in said exhaust gas passage and driven by products of combustion from said combustion means, said velocity compound impulse turbine having blading directly connected to said rotor for driving said rotor;

a source of gas under pressure;

and means for discharging a flow of the gas from said source into said duct adjacent said rotor in a quantity just sufficient to cause said rotor to operate in a ventilated flow field.

4,343,612

OUTBOARD MOTOR INCLUDING A TWO SPEED TRANSMISSION

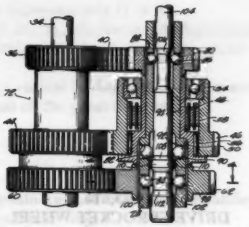
Clarence E. Blanchard, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Jun. 11, 1980, Ser. No. 158,118

Int. Cl.³ B63H *21/28*

U.S. Cl. 440—75 **18 Claims**

17. A transmission comprising an input shaft, a drive shaft, a first drive gear coaxial with said input shaft, a second drive gear coaxial with said input shaft, a first driven gear coaxial with said drive shaft and in mesh with said first drive gear, a second driven gear coaxial with said drive shaft and in mesh with said second drive gear, one of said input shaft and said drive shaft being rotatable relative to said gears coaxial therewith, the other of said input shaft and said drive shaft being fixed to said gears coaxial therewith for common rotation, a sleeve member between said one shaft and said second gear



coaxial therewith, an overrunning one-way clutch between said sleeve member and said second gear coaxial with said one shaft, and means for selectively operably connecting said one said shaft to said first gear coaxial therewith and to said sleeve member.

4,343,613

DERAILLER SYSTEM

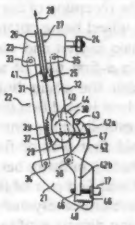
Berndt Leiter, Hergolshausen; Josef Keller; Kurt Schuller, both of Schweinfurt, and Ewald Eisend, Grafenrheinfeld, all of Fed. Rep. of Germany, assignors to Fichtel and Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 5, 1980, Ser. No. 175,540

Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933362

Int. Cl.³ F16H *7/22*

U.S. Cl. 474—82 **21 Claims**



1. A derailling system for a bicycle including a sprocket system having a plurality of drive sprockets and a chain for driving a wheel of said bicycle at different speeds comprising: a movable carrier member having an idler sprocket rotatably mounted thereon for selectively shifting said chain into engagement individually with said sprockets; a guide system for guiding movement of said carrier member along a path essentially parallel with the axis of said driven wheel to urge the chain between individual sprockets; a shifting mechanism including a shift lever for enabling shifting of said movable carrier to a plurality of shifting positions corresponding with said drive sprockets; a cam follower member including a cam follower rotatably mounted on a first part of said guide system; a cam member mounted on a second part of said guide system, said first part and said second part of said guide system being movable relative to each other; transmission means for effecting rotation of said cam member relative to said second part by operation of said shift lever; first spring means connected to urge said cam follower into contact with said cam member thereby to move said movable carrier member along its path of travel whenever said cam member is rotated; and second

spring means biasing said cam follower member to a position relative to said first part, said relative position being defined by a stop member on said cam follower member and a cooperating counterstop member on said first part.

4,343,614

DRIVE SPROCKET WHEEL

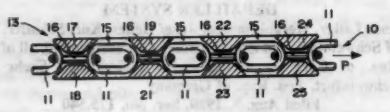
Heinrich Schulte, Witten, Fed. Rep. of Germany, assignor to Klockner-Werke AG, Duisburg, Fed. Rep. of Germany

Filed Dec. 5, 1979, Ser. No. 100,526

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2856099

Int. Cl.[3] F16H 7/06

U.S. Cl. 474—155 5 Claims



1. In a drive sprocket wheel of the type having drive chain link receiving pockets formed between sprocket teeth thereof and a circumferential groove dividing the teeth into a pair of tooth sections with the outer tips at the flanks or sides thereof being cupped for the reception of curved chain links of circular configuration, the wheel being rotatable about its central axis for moving the chain in first and opposite directions, the improvement wherein a first pair of said flanks of each of the teeth, against which the chain links exert pressure during movement of the chain in said first direction, slope toward said first direction for establishing points of contact between said chain links and said first pair of flanks so that said contact points lie approximately midway between opposed outer ends and inner edges of said first pair of flanks, and bottoms of said cupped outer tips are concavely curved in a direction perpendicular to the sloping direction of said flanks.

4,343,615

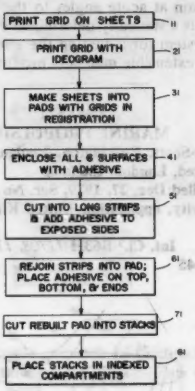
PROCESS FOR FORMING PRINTING CHARACTERS

David S. Shew, 1402 Powell St., San Francisco, Calif. 94133

Filed Sep. 2, 1980, Ser. No. 183,073

Int. Cl.[3] B32B 31/00; B26D 7/06; A44C 3/00

U.S. Cl. 493—325 4 Claims



1. The method of forming printing characters suitable for photographing, comprising the steps, causing to be formed a grid of crossed lines defining a plurality of generally rectangular fields on a surface of sheet material with the lines formed of a marking material rendered invisible when photographed, causing characters to be printed on the surface of the sheet material with a character placed within each rectangular field and the characters being formed by a marking material which is visible when photographed, stacking a plurality of sheets with like indicia thereon so that the grids on the stacked sheets are in substantial registration thus forming a pad from the sheets, wrapping the pad by covering the surfaces thereof with a transparent adhesive material, cutting the pad along parallel grid lines to form strips each one field wide and having a length and thickness equal to that of the pad, treating the surfaces of the strips exposed in the cutting operation with an adhesive material, placing the strips together such that the fields on adjacent strips are aligned to substantially reconstitute the pad, wrapping the reconstituted pad with a transparent adhesive material along the end and top portions, cutting the reconstituted pad along the other parallel grid lines 90° to the initial cuts to form stacks of like print characters adhesively connected in a stack-form along two opposite sides and placing the stacks of characters into a type selector board.

4,343,616

LUBRICANT COMPOSITIONS FOR FINISHING SYNTHETIC FIBERS

Quintin W. Decker, St. Albans, and Erich Marcus, Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1980, Ser. No. 219,217
Int. Cl.[3] D06M *13/20, 15/44*
U.S. Cl. 8—115.6 18 Claims

13. Method of lubricating synthetic yarns which comprises contacting said synthetic yarns with an aqueous emulsion containing about 10 to about 20 percent based on the weight of the total solution of a spin finish consisting essentially of:

(a) About 50–90% by weight of a thermally stable lubricant selected from the group consisting of (1) esters of fatty acids having about 12 to 18 carbons and saturated aliphatic alcohols having about 8 to 18 carbons; (2) triglycerides of fatty acids having 12 to 18 carbons; (3) esters of a polyhydric alcohol and an alkanoic acid having about 8 to 12 carbons where the polyhydric alcohol has the formula

$$(R')_y—C—(CH_2OH)_x$$

wherein x is an integer having values of 3 or 4, R' is an alkyl having 1 to 3 carbons, y is an integer having values of 0 or 1 and y=0 when x=4; and (4) esters of dibasic fatty acids having 2 to 18 carbons and saturated aliphatic alcohols having about 4 to 18 carbons; and

(b) about 10–50% by weight of a surfactant having the formula

$$R—O—(A_aB_b)—H$$

wherein R is an alkyl having 6 to 14 carbons A is

$$CH_2—\underset{\displaystyle CH_3}{\underset{|}{C}}HO—,$$

B is $—CH_2CH_2—O—$, a and b are integers having values of about 4 to 15 and 5 to 10 respectively.

4,343,617

SUTURE AND PROSTHESIS MATERIAL

Paul S. Baur, Jr., 208 Pecan Dr., League City, Tex. 77573

Filed Mar. 16, 1981, Ser. No. 243,871
Int. Cl.[3] D06M *3/02, 3/12;* D02G *2/00*
U.S. Cl. 8—127.6 12 Claims

1. Material for suture and prosthesis comprising silk fibers, the proteins of which have been crosslinked by fixing in a dialdehyde fixative solution for a time sufficient to produce said crosslinking, said fixative solution including a fixative agent selected from one or more of the dialdehyde group consisting of glutaraldehyde, glyoxal and hydroxyadipaldehyde.

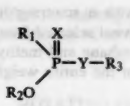
4,343,618

MOTHPROOFING AGENTS

Francis W. Jones; Robert J. Mayfield; Gary J. O'Loughlin, and Ian M. Russell, all of Geelong, Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

Division of Ser. No. 938,253, Aug. 30, 1978, Pat. No. 4,303,652. This application Aug. 11, 1981, Ser. No. 291,999
Claims priority, application Australia, Sep. 6, 1977, PD1533
Int. Cl.[3] D06M *3/02, 13/32*
U.S. Cl. 8—128 R 7 Claims

1. A method of increasing the resistance of keratinous materials to attack by keratin-eating insects which comprises treating the materials with a compound of the general formula:



(1)

wherein:

X and Y are independently O or S;

R_1 is an alkyl, alkoxy, alkylamino, dialkylamino or alkylmercapto radical having 1 to 6 carbon atoms; an amino or aryl radical;

R_2 is an alkyl radical having 1 to 6 carbon atoms;

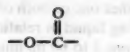
R_3 is a radical of the general formula:

$$—J—(K—L)_n \quad (2)$$

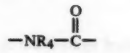
wherein:

J is an aliphatic radical, or radical containing an aromatic or heterocyclic ring;

K is one of the following radicals:



(3)



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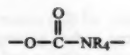

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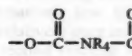
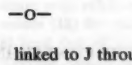


(6)



(7)

linked to J through the oxygen atom in the case of (3), (5) or (6), and through the nitrogen atom in the case of (4), and in which the carbonyl oxygen atom of (3), (4) or (5), or one or both carbonyl oxygen atoms of (6) may be replaced by sulphur; R_4 is hydrogen, an aryl radical, or an alkyl radical of 1 to 6 carbon atoms;

L is a halogenated alkyl or alkenyl radical; an alkyl radical (having 1 to 4 carbon atoms) or aryl radical substituted with a vinylsulphonyl group, vinylsulphonamido group or precursors thereof; or a heterocyclic radical containing 1 to 4 halogen atoms attached to carbon atoms adjacent to a nitrogen atom of the ring, the ring being linked directly to K or through an alkylene group having 1 to 4 carbon atoms;

n is 1 to 3.

4,343,619

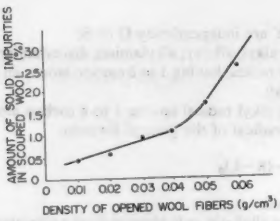
METHOD OF PREPARING A SCOURED ANIMAL HAIR MATERIAL

Ken Kazama, Kamakura; Ikuo Muramoto, Yokohama; Kenji Ozaki, Gifu, and Yoshinobu Kusunoki, Kyoto, all of Japan, assignors to Asahi-Dow Limited, Tokyo and Toa Wool Spinning & Weaving Co., Ltd., Osaka, both of, Japan

Continuation-in-part of Ser. No. 134,321, Mar. 26, 1980, abandoned. This application Mar. 24, 1981, Ser. No. 247,146
Claims priority, application Japan, Mar. 30, 1979, 54-37915; Mar. 30, 1979, 54-37916
Int. Cl.[3] D01C *1/00*
U.S. Cl. 8—139 8 Claims

1. A method for preparing a scoured animal hair material in which the animal hair retains therein 1 to 3% by weight of a residual soapy substance and 0.3 to 5.0% by weight of a residual fatty substance, which method comprises opening a greasy animal hair material to cause it to be in the form of opened loose fibers having a density of from 0.007 to 0.04 g/cm^3, and;

scouring said opened loose fibers with a scouring liquid comprising at least one organic solvent selected from the group consisting of 1,1,1-trichloroethane and methylene chloride, and 0.1 to 10%, based on the entire weight of



said scouring liquid, of a raw animal hair grease which has been extracted from the same type of greasy animal hair as that to be scoured, while moving either one or both of said animal hair material and said scouring liquid in relation to each other at a relative speed of from 3 to 60 m/min.

4,343,620

PROPYLENE OXIDE POLYADDUCTS CONTAINING CARBOXYL GROUPS AND THEIR SALTS

Heinz Abel, Reinach, and Paul Schäfer, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 117,912, Feb. 4, 1980, abandoned, which is a continuation of Ser. No. 870,902, Jan. 19, 1978, abandoned. This application Dec. 22, 1980, Ser. No. 219,202

Claims priority, application Luxembourg, Jan. 24, 1977, 76633

Int. Cl.³ C09B *67/00*

U.S. Cl. 8—557 **38 Claims**

1. A process for dyeing fibrous material made of or containing wool with anionic dyes, which comprises applying, before or during dyeing, to said material an aqueous liquor containing a preparation which contains

(1) a propylene oxide polyadduct containing carboxyl groups, or a salt thereof, obtained from

(a) an adduct of propylene oxide and a trihydric to hexahydric alcohol having 3 to 6 carbon atoms,

(b) a saturated or ethylenically unsaturated aliphatic dicarboxylic acid or the anhydride thereof having 4 to 10 carbon atoms

(c) an aliphatic diol of the formula $HO—(CH_2CH_2O)_nH$, wherein n is 1 to 40

(d) a fatty acid having 8 to 22 carbon atoms and

(e) a monocyclic or dicyclic aromatic dicarboxylic acid or the anhydride thereof having 8 to 12 carbon atoms, which component (e) is condensed with the reaction product of components (a), (b), (c) and (d), and

(2) a non-ionic, surface-active alkylene oxide adduct of a monoalcohol having at least 8 carbon atoms, a trihydric to hexahydric aliphatic alcohol, phenol, a phenol which is substituted by alkyl or phenyl, a fatty acid having 8 to 22 carbon atoms or a dicarboxylic acid having 3 to 10 carbon atoms.

4,343,621

PROCESS FOR THE PRODUCTION OF AQUEOUS SOLUTIONS OF SODIUM CHLORIDE FROM ROCK SALT

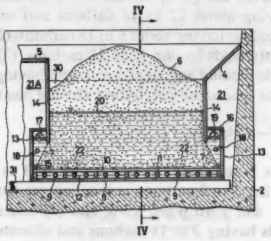
Siegfried Benninger, Schwalbach; Karl Reining, Kelkheim, and Werner Krasel, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 4, 1981, Ser. No. 240,317

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1980, 3008563

Int. Cl.³ B01J *8/02*

U.S. Cl. 23—293 R **3 Claims**



1. A process for the vapor-free production of concentrated aqueous sodium chloride crude brine comprising the steps of

introducing unsaturated crude brine into the base of a rock salt mound in an open dissolving chamber to form a saturated brine containing suspended rock salt particles;

maintaining the level of the saturated crude brine in the dissolving chamber below the top of the rock salt mound and above a vertical or inclined separation screen in the chamber; and

removing suspended rock salt particles from the saturated brine by withdrawing the saturated brine from the dissolving chamber through the separation screen.

4,343,622

METHOD OF MAKING GRANULES BUILT UP FROM A CORE AND AN ENVELOPE

Jean P. Bruynseels, Brussels, Belgium, assignor to Compagnie Neerlandaise de l'Azote, Brussels, Belgium

Filed May 8, 1981, Ser. No. 261,453

Claims priority, application Netherlands, May 12, 1980, 8002738

Int. Cl.³ B01J *8/18*

U.S. Cl. 23—313 FB **2 Claims**

1. A method of making granules built up from a core and an envelope, which method is characterized in that in a bed of solid particles, which by means of a fluidization-gas stream distributed through a perforated, flat, horizontal or slightly slanting bottom plate is kept in the fluidized state, a liquid material containing the substance for the envelope in the molten, dissolved and/or suspended condition is sprayed onto the fluidized nuclei within the fluidized bed from the bottom in the upward direction in the form of droplets having such a small diameter that a droplet can only cover a portion of the surface of a nucleus, by means of at least one vertically disposed hydraulic sprayer, through which the liquid material is sprayed under hydraulic pressure in the desired drop size, and which sprayer is surrounded by a coaxial, annular, converging auxiliary-gas aperture, through which auxiliary gas is passed at such a vertical exit velocity that the conical stream of droplets issuing from the sprayer is narrowed by said auxiliary gas stream to a stream having an apex angle of less than 20°, and in such a quantity that a cavity of dilute fluidized phase, located entirely within the fluidized bed, is formed by said auxiliary gas stream above each sprayer, and the liquid material thus depos-

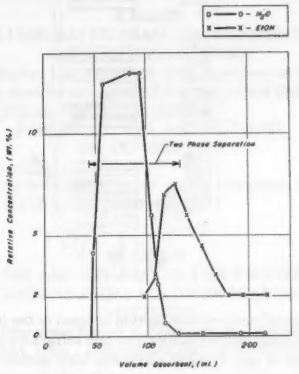
ited on the nuclei is solidified by cooling and/or evaporation of liquid to form granules having a desired size.

4,343,623

USE OF ESTERIFIED SILICA FOR SEPARATION OF ETHANOL FROM WATER

Santi Kulprathipanja, Hoffman Estates, and Richard W. Neuzil, Downers Grove, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 22, 1980, Ser. No. 219,121
Int. Cl.³ C07C 29/76; C10L 1/02
U.S. Cl. 44—53 **11 Claims**



1. A process for separating ethanol from a feed mixture comprising ethanol and water which process comprises contacting at adsorption conditions said mixture with an adsorbent consisting essentially of esterified silica which process comprises the steps of:

(a) maintaining net fluid flow through a column of said adsorbent in a single direction, which column contains at least three zones having separate operational functions occurring therein and being serially interconnected with the terminal zones of said column connected to provide a continuous connection of said zones;

(b) maintaining an adsorption zone in said column, said zone defined by the adsorbent located between a feed inlet stream at an upstream boundary of said zone and a raffinate outlet stream at a downstream boundary of said zone;

(c) maintaining a purification zone immediately upstream from said adsorption zone, said purification zone defined by the adsorbent located between an extract outlet stream at an upstream boundary of said purification zone and said feed inlet stream at a downstream boundary of said purification zone;

(d) maintaining a desorption zone immediately upstream from said purification zone, said desorption zone defined by the adsorbent located between a desorbent inlet stream at an upstream boundary of said zone and said extract outlet stream at a downstream boundary of said zone;

(e) passing said feed stream into said adsorption zone at adsorption conditions to effect the selective adsorption of said ethanol by said adsorbent in said adsorption zone and withdrawing a raffinate outlet stream from said adsorption zone;

(f) passing a desorbent material into said desorption zone at desorption conditions to effect the displacement of said ethanol from the adsorbent in said desorption zone;

(g) withdrawing an extract stream comprising said ethanol and desorbent material from said desorption zone; and

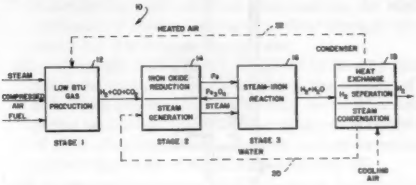
(h) periodically advancing through said column of adsorbent in a downstream direction with respect to fluid flow in said adsorption zone the feed inlet stream, raffinate outlet stream, desorbent inlet stream, and extract outlet stream to effect the shifting of zones through said adsorbent and the production of extract outlet and raffinate outlet streams.

4,343,624

ROTATING FLUIDIZED BED HYDROGEN PRODUCTION SYSTEM

William H. Belke, Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/01089, § 371 Date Dec. 10, 1979, § 102(e) Date Dec. 10, 1979
PCT Filed Dec. 10, 1979, Ser. No. 145,064
Int. Cl.³ C10J 3/56
U.S. Cl. 48—61 **33 Claims**



1. A multi-stage hydrogen generation system (10) comprising:

a. means (12) for producing a relatively low BTU gas comprising carbon monoxide and hydrogen;

b. first reacting means (14) for exothermically reacting said relatively low BTU gas with ferric oxide to produce relatively pure iron and to generate steam;

c. second reacting means (16) for reacting said generated steam with relatively pure iron to produce hydrogen gas;

d. means (18) for recovering said hydrogen gas;

e. at least one of said producing (12) and first and second reacting means (14,16) comprising a rotating fluidized bed, said rotating fludized bed including

(1) an outer substantially cylindrical, elongated perforated wall;

(2) an inner substantially cylindrical, perforated wall spaced apart and substantially coaxial and co-extensive with said outer perforated wall;

(3) enclosing walls defining within said outer and inner perforated walls a substantially annular fluid-ization chamber;

(4) a fluidizable bed of pulverulent solid particles in said chamber;

(5) means for rotating said chamber about the axis to cause the particles to centrifugally gravitate toward said outer perforated wall;

(6) means for feeding a gaseous agent stream into said chamber through said outer perforated wall, said gas stream fluidizing said particles in said chamber, at least a portion of said gaseous stream exiting said chamber through said inner perforated wall; and

(7) means for directing said exiting gaseous stream away from said chamber.

4,343,625

HIGH TEMPERATURE SOLIDS GASIFICATION APPARATUS WITH SLAG REDUCTION MEANS

Walter C. Gates, Jr., Carmel, N.Y., assignor to Texaco Inc., White Plains, N.Y.

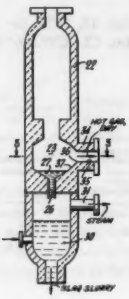
Filed Jan. 19, 1981, Ser. No. 225,881
Int. Cl.³ B01J 3/00
U.S. Cl. 48—62 R **7 Claims**

1. In combination with a high temperature solids gasification apparatus where finely divided solids are reacted in a down flow generator and liquid slag with gas products are downwardly discharged from said generator through a constriction

and into a plenum chamber therebelow, said plenum chamber having an inside and an outside radius, means for reducing the slag carry-over with the effluent gas from said plenum chamber, comprising

a restricted outlet at the bottom of said plenum chamber for causing a pool of liquid slag to form and assist in coalescence of said slag, and

a lateral outlet from said plenum chamber and located above said pool of slag for carrying said effluent gas,



said lateral outlet having a frusto conical portion connecting said plenum chamber to a nozzle section of said lateral outlet and narrowing from said plenum chamber to form a throat at the intersection of the frustro conical portion and said nozzle,

said throat being offset relative to the vertical axis of said plenum chamber a distance greater than the inside radius of said plenum chamber, whereby said liquid slag carry-over is reduced.

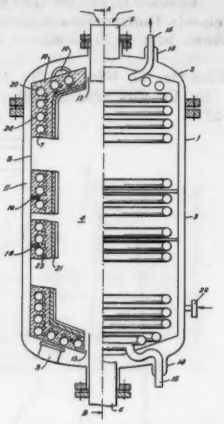
4,343,626

REACTOR FOR PRODUCING A CARBON MONOXIDE AND HYDROGEN CONTAINING GAS

Helmut Peise, Freiberg; Wolfgang Heinrich, Freiberg; Peter Göhler, Freiberg; Friedrich Berger, Brand-Erbisdorf; Klaus Lucas, Freiberg; Manfred Schingnitz, Freiberg; Dieter König, Freiberg, all of German Democratic Rep.; Aleksander Jegorow, Moskwa, U.S.S.R.; Vasilij Fedotov, Moskwa, U.S.S.R.; Vladimir Gavrilin, Moskwa, U.S.S.R.; Ernest Gudumov, Moskwa, U.S.S.R.; Vladimir Semenov, Moskwa, U.S.S.R.; Igol Achmatov, Moskwa, U.S.S.R.; Nikolaj Majdurov, Moskovsk, U.S.S.R., and Evgenij Abraamov, Moskwa, U.S.S.R., assignors to Brennstoffinstitut Freiberg, Freiberg, German Democratic Rep. and Gosudarstwennyi Nautschno-Issledowatelskij i Projektnyi Institut Astonoj Promyschlennosti i Produktow Organitscheskogo Sintesa, Moscow, U.S.S.R.

Filed Feb. 19, 1980, Ser. No. 122,686
Int. Cl.³ C10J 3/72
U.S. Cl. 48—67 **6 Claims**

1. A reactor for partial oxidation under increased pressure of a powderized and/or liquid fuel, comprising: an outer pressure vessel; a gas-tight housing arranged in said vessel; said housing being spaced apart from the inner wall of said vessel to bound an interspace therewith; a cooling wall adjoining the inner surface of said housing and enclosing a reaction chamber, said cooling wall including coiled cooling pipes embedded in a lining of tamped refractory material; circumferential webs connected to the inner surface of said housing and projecting into said refractory material, the length of each web corresponding substantially to one winding of the coiled pipes to prevent propagation of leaking currents of hot gas from the reaction chamber beyond sections of the inner surface delimited by the webs; at least one passage in said cooling wall and said housing for establishing communication between said reaction chamber and said interspace; at least one connecting conduit opening into said interspace to introduce an inert gas therein; said cooling wall having a cylindrical configuration and including a cooling coil formed of a plurality of adjoining pipes; each of said circumferential webs being in the form of a helix with ends vertically spaced from each other and at least



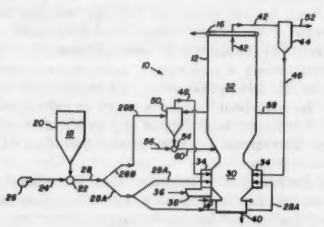
one additional vertical web section secured to the inner surface of said housing and projecting into said refractory material, the outer edge of said vertical additional web section including a plurality of semicircular recesses to fit said pipes and the ends of said additional vertical web interconnecting the vertically spaced ends of respective circumferential webs.

4,343,627

METHOD OF OPERATING A TWO-STAGE COAL GASIFIER

Michael C. Tanca, Tariffville, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 28, 1980, Ser. No. 210,899
Int. Cl.³ C10J 3/46
U.S. Cl. 48—202 **2 Claims**



1. In a method of operating of an entrained flow coal gasifier, of the type wherein coal is burned in a combustion zone with near stoichiometric air to generate combustion products, the combustion products are conveyed from the combustion zone into a reduction zone, and additional coal is injected into the combustion products in the reduction zone to react with the combustion products therein to form a combustible gas, the improvement in supplying coal to the gasifier comprising:

a. establishing a dilute phase mixture of pulverized coal and air;

b. splitting said dilute phase mixture of pulverized coal and air into a first and a second portion;

c. conveying the first portion of said dilute phase mixture of

pulverized coal and air to the combustion zone of the gasifier;

d. separating the pulverized coal from the air of the second portion of said dilute phase mixture;

e. conveying the air of the second portion of said dilute phase mixture to the combustion zone of the gasifier;

f. mixing the pulverized coal separated from the air of the second portion of said dilute phase mixture with steam to establish a dense phase mixture thereof having coal-to-steam weight ratio of approximately ten to one; and

g. conveying said dense phase mixture of pulverized coal and steam to the reduction zone of the gasifier.

4,343,628

FLUORINATED DIAMOND BONDED IN FLUOROCARBON RESIN

Gene W. Taylor, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 27, 1981, Ser. No. 228,837
Int. Cl.³ C08K 3/16
U.S. Cl. 51—298 **17 Claims**

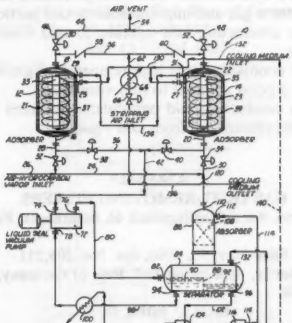
1. An article of manufacture which comprises fluorinated diamond bonded in fluorocarbon resin.

4,343,629

PROCESS AND APPARATUS FOR RECOVERING HYDROCARBONS FROM AIR-HYDROCARBON VAPOR MIXTURES

Harold L. Dinsmore; Robert E. Schwartz, and Willard N. Tuttle, all of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Feb. 5, 1981, Ser. No. 231,917
Int. Cl.³ B01D 53/04, 53/14
U.S. Cl. 55—28 **19 Claims**



1. A process for recovering hydrocarbons from an inlet air-hydrocarbon vapor mixture comprising the steps of:

(a) flowing said inlet mixture through a first bed of solid adsorbent having an affinity for hydrocarbons whereby hydrocarbons are adsorbed on said bed and a residue gas stream comprised of substantially hydrocarbon-free air is produced;

(b) venting said substantially hydrocarbon-free air to the atmosphere;

(c) evacuating a second bed of solid adsorbent having hydrocarbons adsorbed thereon by vacuum pumping whereby a major portion of said hydrocarbons are desorbed from said bed and a hydrocarbon-rich air-hydrocarbon mixture is produced;

(d) contacting the air-hydrocarbon mixture produced in step (c) in an absorber with a liquid absorbent having an affinity for hydrocarbons whereby a major portion of the hydrocarbons are removed therefrom and a residue gas stream comprised of air and a minor portion of hydrocarbons is produced;

(e) combining said residue gas stream produced in step (d) with said inlet air-hydrocarbon mixture of step (a) whereby hydrocarbons contained therein are adsorbed on said first bed of solid adsorbent;

(f) periodically changing the flow patterns of said inlet air-hydrocarbon mixture and changing the bed of solid adsorbent being evacuated whereby when the bed through which the inlet air-hydrocarbon mixture is flowing becomes loaded with adsorbed hydrocarbons, the inlet air-hydrocarbon mixture is caused to flow through the bed which has just been evacuated; and

(g) cooling said beds of solid adsorbent to thereby prevent said beds from runaway overheating, the cooling of said beds being accomplished by flowing the liquid absorbent of step (d) through heat transfer coils disposed in said beds of solid adsorbent after contacting said air-hydrocarbon mixture therewith in accordance with step (d).

14. Apparatus for recovering hydrocarbons from air-hydrocarbon vapor mixtures comprising:

(a) a pair of adsorbers containing beds of solid adsorbent having an affinity for hydrocarbons and having first and second connections on opposite sides of said beds;

(b) a pair of heat transfer coils, one disposed in each of said adsorbers for cooling the beds of solid adsorbent disposed therein having inlet and outlet connections;

(c) first conduit means connected to the first connections of said adsorbers for conducting said air-hydrocarbon vapor mixture to said adsorbers and for evacuating said adsorbers;

(d) valve means disposed in said first conduit means for selectively causing said air-hydrocarbon vapor mixture to flow through one or the other of said adsorbers;

(e) second conduit means connected to the second connections of said adsorbers for conducting residue gas exiting said adsorbers to the atmosphere;

(f) second valve means disposed in said second conduit means for selectively causing the second connections of one or the other of said adsorbers to be open to the atmosphere;

(g) a vacuum pump having a suction connection and a discharge connection;

(h) third conduit means connected between the suction connection of said vacuum pump and the first conduit means connected to said adsorbers;

(i) third valve means disposed in said third conduit means for selectively communicating one or the other of said adsorbers with the suction connection of said vacuum pump;

(j) an absorber for contacting an air-hydrocarbon vapor mixture with a liquid absorbent having an air-hydrocarbon vapor mixture inlet connection, a residue gas outlet connection, a lean liquid absorbent inlet connection and a rich liquid absorbent outlet connection;

(k) fourth conduit means connected between the air-hydrocarbon vapor mixture inlet of said absorber and the discharge connection of said vacuum pump;

(l) fifth conduit means connected between the residue gas outlet connection of said absorber and said first conduit means;

(m) a rich liquid absorbent pump having a suction connection and a discharge connection;

(n) sixth conduit means connected between the rich liquid absorbent outlet connection of said absorber and the suction connection of said rich liquid absorbent pump; and

(o) seventh conduit means connected between the discharge connection of said rich liquid absorbent pump and the inlet connections of said heat transfer coils.

4,343,630
LIQUID DE-GASSING UNIT

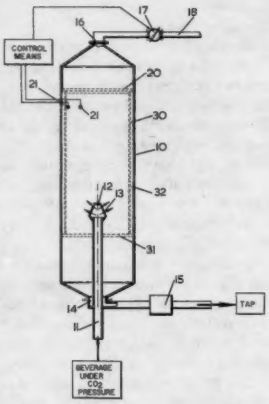
Anthony Grant, Teddington, England, assignor to Spikeville Limited, Surrey, England

Continuation of Ser. No. 35,546, May 3, 1979, abandoned. This application Aug. 22, 1980, Ser. No. 180,403

Claims priority, application United Kingdom, May 9, 1978, 18578/78

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—170 3 Claims



1. An apparatus for use in dispensing from a selectively operable tap-like dispensing outlet a carbonated beverage in discontinuous increments and with a minimum of froth comprising, in combination, a storage chamber, said storage chamber being adapted to hold therein when filled to a predetermined level a predetermined volume of carbonated liquid beverage, said chamber having an inlet through which a carbonated liquid beverage enters said chamber, said inlet being located below said predetermined level, said inlet being adapted to be connected exteriorly and said chamber to a container for containing said beverage under gas pressure, said inlet terminating in a nozzle means within said chamber, said nozzle means including at least one discharge opening positioned to direct incoming liquid carbonated beverage from said container into agitating relation to liquid carbonated beverage in said chamber above said nozzle means, said agitating relation being effective to release excess gas from said beverage, a beverage outlet in the lower end of said chamber beneath the level of said nozzle means and adapted to communicate with said tap-like dispensing outlet to permit dispensing from said dispensing outlet beverage having excess gas released therefrom, said beverage being flowable through said beverage outlet of said chamber and through said tap-like dispensing outlet when said tap-like dispensing outlet is open to cause the volume of carbonated liquid beverage in said chamber to drop below said predetermined level, a gas outlet communicating with said chamber above said predetermined liquid level, a valve controlling said gas outlet, and flow control means including liquid level sensing means for opening said valve when liquid beverage in said chamber falls below said predetermined level and for closing said valve when liquid beverage in said chamber rises to said predetermined level, whereby said pressurized beverage flows from said container through said inlet and into said chamber under reduced chamber pressure when said valve is open, and whereby when said valve is closed gas pressure above the liquid in said chamber rises until there is pressure equalisation between said gas pressure and the gas pressure in said container, whereby further inflow of beverage from said container into said chamber ceases when said pressure equalisation is reached.

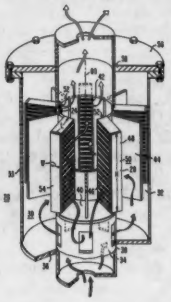
4,343,631
HOT GAS PARTICULATE REMOVAL

David F. Ciliberti, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 30, 1981, Ser. No. 230,142

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 23 Claims



1. Apparatus for filtering particulates from a mixture of particulates in a high temperature gas, comprising:

a vessel having an internal volume;

a duct fixed to and disposed within said vessel, said duct having interior space;

a plurality of filter elements affixed to and extending outwardly from said duct, said elements having inlet channels in fluid communication with said vessel internal volume and outlet channels in fluid communications with said duct interior space, said inlet and outlet channels being separated by a ceramic membrane permeable to said high temperature gas and impermeable to said particulates;

means for conducting said mixture to said vessel internal volume;

means for conducting said high temperature gas out of said duct to a point external to said vessel; and

means for conducting said particulates removed from said high temperature gas from said vessel.

4,343,632
GAS DUST-REMOVING FILTERS

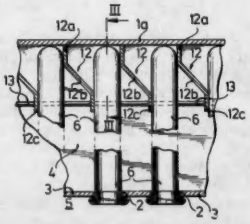
Adolf Margraf, Am Schleplingsbach 46, Stadthagen, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,231

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1980, 3009596

Int. Cl.³ B01D *46/02*

U.S. Cl. 55—341 HM 3 Claims



1. In a gas dust-removing filter of the kind including a filter casing provided with a vertical perforated partition which divides the casing into a clean gas chamber and a gas dust-removing chamber, and filter bags inserted horizontally into

the gas dust-removing chamber through the perforations of said partition, each of said filter bags having an open end sealed at the clean gas side of said partition and a closed end supported on a rear wall of the casing, each of said filter bags being spaced apart from adjacent filter bags, said filter bags being provided with internal spacing elements for keeping apart the plane and parallel surfaces of each of said filter bags during the dust-removing operation, the improvement which comprises, parallel vertical guide members disposed in said gas dust-removing chamber and engaging the closed ends of said filter bags, each guide member being disposed between two adjacent filter bags, each guide member having a surface which slopes with respect to the rear wall of the casing and being secured to the rear wall of the casing, and support members which engage said guide members and are disposed so as to support the closed ends of said filter bags adjacent to the rear wall of the casing, the projection of said surface on the rear wall of the casing corresponding to the spacing between two adjacent filter bags, so that said filter bags are being held in a fixed position by said guide members and twisting thereof is substantially eliminated or reduced.

4,343,633

HIGH PRESSURE PURIFICATION OF HYDROGEN

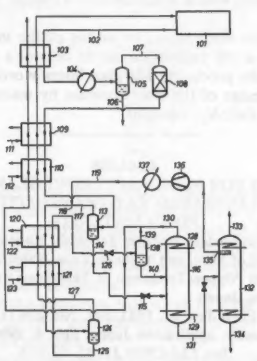
Helmut Kick; Hans Kistenmacher; Walter Schramm; Berndt Hoerner, and Udo Lang, all of Munich, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,619

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947239; Dec. 24, 1979, 2952347

Int. Cl.³ F25J *3/00*

U.S. Cl. 62—23 **18 Claims**



1. In a process for the purification of a hydrogen stream contaminated with at least methane and ethane, said process comprising subjecting the hydrogen stream to multistage partial condensation and separation of the respectively formed condensates, the improvement which comprises subjecting the hydrogen stream to the multistage partial condensation under a pressure above about 100 bar and adjusting said process so as to yield in the final condensate 5–40 molar percent of ethane with a predominating amount of methane thereby ensuring extensive condensation of the methane contained in the hydrogen stream to produce a hydrogen stream of high purity.

4,343,634

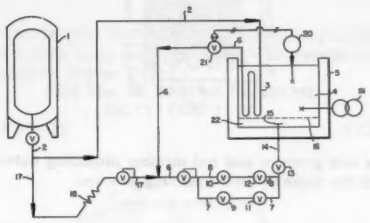
PROCESS FOR OPERATING A FLUIDIZED BED

Robert B. Davis, Nyack, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 23, 1981, Ser. No. 246,916

Int. Cl.³ F17C *7/02*; F25D *25/00*

U.S. Cl. 62—62 **2 Claims**



1. In a process for operating a fluidized bed, wherein the bed particles have a Reynolds number of less than 20, at a predetermined cryogenic temperature comprising (i) bringing a cryogenic fluid into indirect contact with the bed; (ii) permitting the fluid to vaporize at the area of indirect contact whereby the bed is cooled; and (iii) utilizing the vapor from step (ii) to fluidize, and further cool, the bed, said cooling in steps (ii) and (iii) being from ambient temperature to the predetermined cryogenic temperature, the improvement comprising changing, continuously or stepwise, the minimum fluidizing mass flow of vapor as the temperature of the bed changes in accordance with the following equation:

$$A = 1.1 \times \frac{(BC)^2}{150} \times \left(\frac{D-E}{F}\right) \times g \times \left(\frac{H^3}{1-H}\right) \times J \times E$$

wherein:

A=minimum fluidizing mass flow of vapor in grams per second

B=sphericity of bed particles

C=largest particle diameter in centimeters

D=bulk density of particles in grams per cubic centimeter

E=vapor density at temperature of the bed in grams per cubic centimeter

F=viscosity of the vapor at temperature of the bed in grams per centimeter per second

g=980 centimeters per second squared

H=voidage

J=bed area in square centimeters

4,343,635

GLASS FIBER-FORMING APPARATUS

Kwan Y. Kim, Pickerington, and Clarence E. Fracker, Frazeyburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

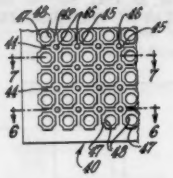
Filed Dec. 29, 1980, Ser. No. 221,113

Int. Cl.³ C03B *37/025*

U.S. Cl. 65—1 **9 Claims**

1. An orifice plate for a glass fiber drawing bushing of the type having a flat undersurface and a plurality of orifices formed therethrough, the improvement comprising at least two sets of grooves formed on said undersurface, said grooves extending in intersecting relationship to divide said undersur-

face into a plurality of sections, said orifices being located within said sections, and a rod member at an intersection of



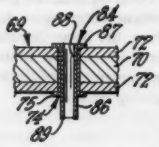
two of said grooves, said rod member projecting outwardly beneath the depth of the intersecting grooves.

4,343,636

METHOD AND APPARATUS FOR FORMING GLASS FIBERS

Mohinder S. Bhatti, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 20, 1981, Ser. No. 255,987
Int. Cl.³ C03B 37/025
U.S. Cl. 65—1 **16 Claims**



14. The method of forming glass fibers comprising:

providing a feeder for supplying molten streams of inorganic material to be attenuated into fibers, said feeder comprising:

a refractory metal core having an oxygen impervious, precious metal sheath intimately bonded thereto by hot isostatic pressing to form a laminate, said laminate having at least one aperture extending therethrough;

a first element positioned in said aperture, said first element having a flange in abutting engagement with one side of said sheath and an orifice extending therethrough;

a second element positioned in said orifice of said first element, said second element having a flange in abutting engagement with an opposite side of said sheath and a passageway adapted to permit said molten glass to pass therethrough; said first element being sealed to said laminate to prevent the oxidation of said core at elevated temperatures; and

attenuating the streams of molten glass into fibers.

4,343,637

METHOD AND APPARATUS FOR MONITORING THE DIAMETER OF FIBERS

Frederick M. Shofner, Knoxville, Tenn.; Neil E. Greene, Granville, and Terry J. Hanna, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Aug. 15, 1980, Ser. No. 178,269
Int. Cl.³ C03B 37/025
U.S. Cl. 65—2 **16 Claims**

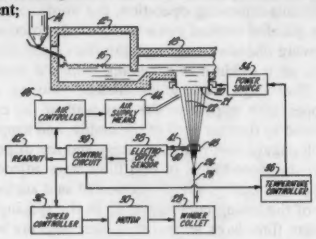
1. A method of controlling the average diameter of a plurality of glass fibers, said method comprising the steps of:

(a) illuminating a predetermined portion of said fibers in a fiber fan with electromagnetic radiation;

(b) sensing all of the electromagnetic radiation scattered backwards from said fibers which passes through a predetermined reflection zone;

(c) generating a first signal, V_f, responsive to the amount of electromagnetic radiation sensed when the fibers are present;

(d) generating a second signal, V_b, responsive to the amount of electromagnetic radiation sensed when no fibers are present;



(e) generating a third signal, V_{cal}, by means of a calibration device which interconnects the electromagnetic illuminating device of (a) above and the electromagnetic radiation sensing device of (b) above;

(f) inputting a fourth signal, V_{ref}, by suitable exterior switching devices;

(g) using a microcomputer to generate a fifth signal, V_f, from the above signals one through four based upon the equation:

$$V_f = (V_f - V_b)\frac{V_{ref}}{V_{cal}}$$

which is an indication of the average diameter of said fibers;

(h) comparing this fifth signal by means of the microcomputer to a previously stored sixth signal to produce an error signal which is indicative of a change in fiber diameter;

(i) using the error signal by means of the microcomputer located in the control circuit to control a fiber forming process for producing said glass fibers in order to maintain the diameter of the fiber constant by maintaining signal number five, V_f, constant.

4,343,638

METHOD FOR MANUFACTURING GLASS FIBERS FROM AN INFRARED RAY-TRANSMITTING GLASS FIBER MATERIAL

Seiko Mitachi; Shuichi Shibata; Terutoshi Kanamori; Toyotaka Manabe, all of Mito, and Mitsuho Yasu, Katsuta, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,716
Claims priority, application Japan, Feb. 4, 1980, 55-11531
Int. Cl.³ C03B 37/07, 37/075
U.S. Cl. 65—2 **7 Claims**

1. A method for manufacturing glass fibers using an infrared ray-transmitting glass fiber material, comprising the steps of

(1) mixing BaF_2, GdF_3 and ZrF_4 in a ratio of 28 mol% to 38 mol%, 2 mol% to 7 mol% and 58 mol% to 69 mol%, respectively, to obtain a mixture;

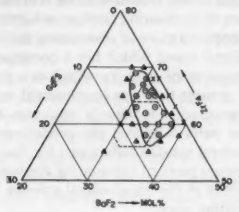
(2) melting the mixture to provide a melt;

(3) casting the melt in a metal mold with a hollow section which is preheated at a temperature of 100° C. or more, but at a temperature less than a glass deformation temperature;

(4) annealing said melt in said metal mold to form a glass rod, said glass rod forming step including heating the melt in the

temperature range of about 200° C. to less than the glass deformation temperature and cooling said melt;

(5) removing said glass rod from said metal mold and optically polishing it at the ends and the sides;



and drawing the tip of the glass rod while applying tension to the tip of said glass rod, said drawing step including heating the tip of said glass rod and drawing the heated portion of said glass rod into a glass fiber while maintaining the temperature of the end portion of said glass rod constant.

4,343,639

PROCESS FOR PRODUCTION OF FIBER MATS

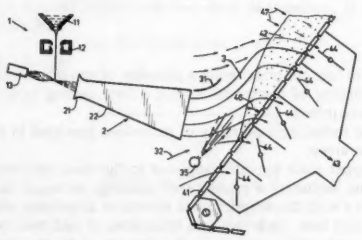
Edgar Muschelknautz, Leverkusen, and Norbert Rink, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 7, 1981, Ser. No. 251,807

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1980, 3016114; Jun. 20, 1980, 3023016

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—4.4 **6 Claims**



1. In a process for the production of mats made of organic or inorganic fibers, comprising dispersing fibers in a flowing gas so as to issue together from a channel, depositing the fibers on a perforated conveyor belt for the formation of the mat, and removing the gas by suction below the conveyor belt, the improvement which comprises

(a) disposing the conveyor belt so as to form an angle of about 90° to 150° with the direction of gas flow at the outlet of the channel;

(b) deflecting the gas flow on one side of the channel in the direction of the conveyor belt such that the gas flow is deflected in the direction of the conveyor belt by the Coanda-effect after issuing from the channel;

(c) the deflected gas flow entraining ambient air or recirculated gas from the surroundings in the direction of the conveyor belt downstream of the deflection;

(d) on the opposite side of the channel ambient air flowing into the region of the fiber deposit between the conveyor belt and the lower edge of the channel in the direction of movement of the conveyor belt, at an angle of about 45° to 90° to the direction of gas flow at the channel outlet; and

(e) removing the total flow by suction on the conveyor belt such that the gas carrying the fibers takes an S-shaped path to the conveyor belt with a double deflection, whereby the direction of flow is at an angle of from 0° to about 30° with the conveyor belt at the turning point.

4,343,640

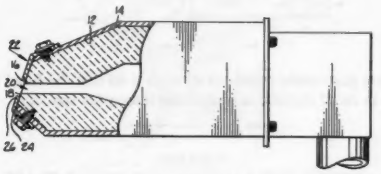
ATTENUATION BURNER FOR FORMING FIBERS

Thomas L. Dale, Englewood, Colo., assignor to Manville Service Corporation, Denver, Colo.

Filed Mar. 20, 1981, Ser. No. 245,861

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—16 **5 Claims**



1. A burner for use in the flame attenuation of filaments, comprising:

a combustion chamber, said combustion chamber including a metal casing and a refractory lining, said casing at least partially surrounding the refractory lining and said lining having an inlet opening and an outlet opening, said outlet opening being formed in an inclined front surface of said refractory lining and defining upper and lower front faces, said combustion chamber having a pair of substantially parallel surfaces, a first intermediate surface positioned between and inclined relative to both one of said substantially parallel surfaces and said upper front face, a second intermediate surface positioned between and inclined relative to both the other of said substantially parallel surfaces and said lower front face, said metal casing enclosing said pair of substantially parallel surfaces and said first and second intermediate surfaces but leaving said inclined front surface exposed;

means for supplying a fuel/air mixture to said chamber;

means for igniting said mixture; and protective means attached to at least one of said intermediate surfaces which overlaps the metal casing enclosing said surface, and partially covers said inclined front surface to protect it from engagement by improperly attenuated filaments.

4,343,641

ARTICLE HAVING A SCRATCH RESISTANT LUBRICATED GLASS SURFACE AND ITS METHOD OF MANUFACTURE

Addison B. Scholes, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

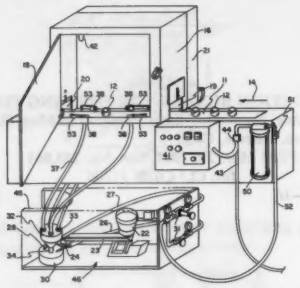
Filed Mar. 2, 1981, Ser. No. 239,241

Int. Cl.³ C03C *17/00*

U.S. Cl. 65—60.2 **15 Claims**

1. A method of preventing initial surface damage effects to glassware after its formation and during annealing thereof so that abrasion resistance and strength characteristics are maintained, said method comprising shaping molten glass to form glassware, adhering over the surface of said glassware a discontinuous distribution of discrete fusible particulate matter such that optical coupling occurs, transporting in close prox-

imity the glassware, said glassware being subject to stress-strain conditions, and annealing said glassware and fusing said



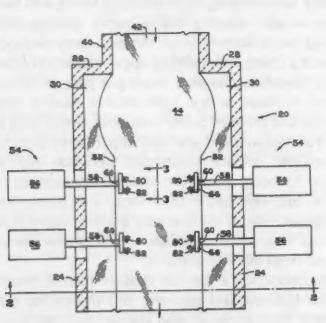
discrete particulate matter to its surface so that the fused matter is in relief thereon and provides interstitial spacings.

4,343,642

METHOD FOR ATTENUATING FLOAT GLASS

Charles K. Edge, Sarver, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 1, 1980, Ser. No. 174,481
Int. Cl.[3] C03B *18/06*
U.S. Cl. 65—99.5 6 Claims



1. In a method of attenuating a ribbon of glass by a plurality of opposed pairs of attenuating devices spaced longitudinally within an attenuating zone of a flat glass forming chamber, each of said attenuating devices engaging adjacent marginal edge portions of the ribbon as the ribbon advances downstream through the attenuating zone upon a pool of molten metal toward a discharge end of said chamber, the ribbon having internal forces which tend to maintain the ribbon in an equilibrium condition and resist attempts to attenuate the ribbon from its equilibrium condition, wherein said attenuating devices are spaced and actuated to exert longitudinal and lateral attenuation forces on the ribbon which act against the internal forces of the ribbon to generate non-uniform longitudinal and lateral stresses in the ribbon within the attenuating zone, which non-uniform longitudinal and lateral stresses detrimentally affect the optical quality of the final ribbon, the improvement comprising practicing the steps of:

longitudinally spacing said plurality of opposed pairs of attenuating devices in such proximity relative to one another in said attenuating zone such that the width of the ribbon is maintained between adjacent pairs of attenuating devices at least about 95 percent of the average ribbon width measured at said adjacent opposed pairs of attenuating devices; and

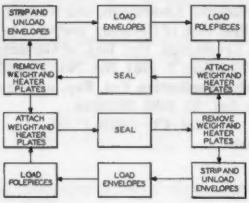
rotating said plurality of opposed pairs of attenuating devices with progressively increasing rotational speeds relative to the preceding opposed pair to accelerate the engaged portions of said ribbon with each of said plurality of opposed pairs of attenuating devices, wherein each of said plurality of opposed pairs of attenuating devices is rotated with a rotational speed which has a corresponding longitudinal component of velocity which is a predetermined amount ΔV greater than the longitudinal velocity of the ribbon as measured immediately upstream from each of said opposed pairs wherein, the predetermined amount ΔV is maintained substantially equal for each of said plurality of opposed pairs of attenuating devices to minimize non-uniformities in the longitudinal stresses in the ribbon in the attenuating zone.

4,343,643

SEALING ARTICLES INTO A GLASS ENVELOPE AND COMPOUND HOLDER THEREFOR

Elmo D. Miller, Kansas City, Mo., assignor to Western Electric Co., Inc., New York, N.Y.

Filed Jan. 5, 1981, Ser. No. 222,437
Int. Cl.[3] C03B *23/09, 23/13, 23/18*
U.S. Cl. 65—103 8 Claims



1. A holder for positioning a plurality of envelopes relative to a plurality of electrodes during a heat sealing operation, which comprises:

a base including a plurality of extensions mounted in a precise array;

a stripper plate mounted adjacent to the base, said stripper plate including a plurality of openings arranged in said array with the stripper plate having an alignment relative to said base, such that said extensions of said base extend through said openings in the stripper plate, the stripper plate having a seat for one of said envelopes formed about each of the openings, each of the extensions having at least one reference surface for mounting at least one of said electrodes in reference thereto, whereby said at least one electrode becomes positioned relative to said envelope positioned on said seat;

a heater plate being releasably mounted relative to said stripper plate adjacent ends of said envelopes for heating said envelopes and said electrodes thereby forming a seal between said ends of said envelopes and said electrodes; and

a heat shield positioned between said base and said heater plate for protecting said base from heat radiated from said heater plate during the heat sealing operation.

8. An improved method of sealing, in each of a number of successive cycles, ends of a plurality of cylindrical articles, which involves at least two plate assemblies, each such plate assembly adapted to hold a plurality of said articles wherein, after an initial startup cycle, the method comprises:

loading one plurality of said articles onto a first plate assembly having a plurality of seats arranged in an array on said first plate assembly; removing a previously heated heater plate from a previously loaded, second plate assembly,

said heater plate and said second plate assembly being at a temperature higher than the temperature of said first plate assembly;

removably mounting said removed heater plate to said first plate assembly to position a heating zone of said heater plate about each of said ends of said articles loaded onto said first plate assembly;

placing said first plate assembly and said heater plate into a sealing chamber;

heating said heater plate within said sealing chamber to seal the ends of said one plurality of said articles;

unloading a previously heated plurality of said articles from said second plate assembly; and

allowing said second plate assembly to cool down from said temperature higher than the temperature of the first plate assembly upon removal of the heater plate from the second plate assembly before loading in a subsequent cycle a subsequent plurality of said articles onto such second plate assembly prior to removably mounting said removed heater plate to such second plate assembly and heating the heater plate in such subsequent cycle to seal the ends of such subsequent plurality of the articles.

4,343,644

APPARATUS FOR MAKING HOLLOW GLASSWARE AND METHOD OF OPERATING THE APPARATUS

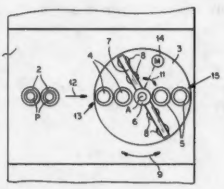
Helmut Hüllen, and Werner-Dieter Knoth, both of Essen, Fed. Rep. of Germany, assignors to Veba-Glas AG, Essen, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,699

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1979, 2950280

Int. Cl.³ C03B *9/36, 9/40*

U.S. Cl. 65—241 **8 Claims**



1. An apparatus for making hollow glassware, said apparatus comprising:

at least one stationary preform mold;

a turntable rotatable about an upright axis adjacent said preform mold and having for each preform mold at least two angularly spaced final molds;

means for rotating said turntable about said axis and thereby orbiting each of said final molds through a transfer position close to said preform mold and a takeout position angularly offset from said transfer position and remote from said preform mold;

at least one arm above said turntable and final molds and carrying at least two respective mold heads, said arm being pivotal about said axis with said mold heads vertically alignable with the respective final molds;

means for pivoting said arm and said mold heads about said axis independently of said turntable; and

a source of air at a pressure different from ambient connected to said mold heads.

4,343,645

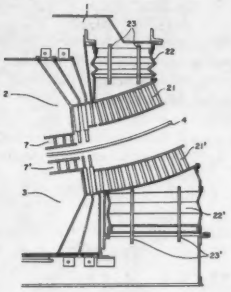
QUENCHING APPARATUS FOR TEMPERING CURVED GLASS PLATES

Kenzo Abe, Tokyo, Japan, assignor to Asahi Glass Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 766,369, Feb. 7, 1977, abandoned, which is a continuation of Ser. No. 640,892, Dec. 15, 1975, abandoned. This application Apr. 4, 1978, Ser. No. 893,399

Int. Cl.³ C03B *27/04*

U.S. Cl. 65—348 **8 Claims**



1. A quenching apparatus for tempering a curved glass plate, which comprises:

an upper blower head device and a lower blower head device for quenching said curved glass plate by means of air blown out of said devices and toward opposite surfaces of said plate which is interposed between said devices;

each of said upper and lower devices including a central blower head having blower nozzles disposed therein, and independent and separated side blower heads, having blower nozzles disposed therein, and disposed upon both sides of said central head wherein said side blower heads include inner blower boxes which are provided with side walls;

means for axially expandably adjusting said side walls so as to correspondingly adjust said side blower heads to the curvature of the curved portions of said curved glass plate, and means for exchanging said side blower heads so as to alternatively likewise correspond to the curvature of the curved portions of said curved glass plate wherein said side blower heads are operatively connected to blower box means, said side walls of said side blower heads comprise an axially expandably adjustable bellows component so as to in turn adjust the relative angle and length of said blower heads with respect to the apparatus and wherein different type nozzles are disposed upon said central blower heads so as to impart partial tempering to said plates and said partial temper nozzles are exchangeable so as to impart full surface tempering to said plate.

4,343,646

METHOD FOR PRODUCING FERTILIZER FROM WASTE PAPER

Richard P. Leonard, West Seneca, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,181

Int. Cl.³ C05F *11/00;* **C08B** *5/02*

U.S. Cl. 71—25 **16 Claims**

1. A method for producing a fertilizer and soil conditioner including the steps of:

a. adding dilute nitric acid to a shredded or particulate cellulosic material to form a reaction mixture and to initiate nitration of the cellulosic material whereby nitrogen is organically bound to the cellulosic material;

b. allowing said nitration to take place for a sufficient length

of time to achieve approximately a 5–10% nitrogen content dry weight for the reaction products;

c. neutralizing the reaction mixture to stabilize the reaction products at said approximately 5–10% nitrogen content dry weight; and

d. drying the reaction products to produce a nitrogen fertilizer and soil conditioner.

4,343,647

SUBSTITUTED BENZYLTRIALKYLAMMONIUM SALTS AND THEIR USE AS PLANT GROWTH REGULATORY CONTROL AGENTS

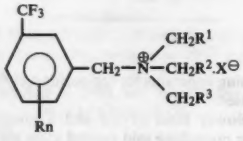
Joseph Dunbar, Midland, Mich.; Theodore W. Holmsen, Clayton, Calif., and Herman O. Senkbeil, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 11,746, Feb. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 950,202, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 742,170, Nov. 15, 1976, abandoned. This application Jun. 9, 1980, Ser. No. 157,755

Int. Cl.³ A01N *33/04*; C07C *87/30*

U.S. Cl. 71—76 **46 Claims**

1. A compound corresponding to the formula



wherein R represents hydrogen, chloro, bromo or trifluoromethyl; n represents an integer of from 1 or 2, with the proviso that when R is trifluoromethyl, n is 1; R^1, R^2 and R^3 each independently represent ethyl, n-propyl, n-butyl, isobutyl, ethynyl, vinyl or ethoxymethyl and X represents a nonphytotoxic anion.

4,343,648

HERBICIDES

Gerhard Hamprecht, Weinheim; Rolf-Dieter Acker, Leimen, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

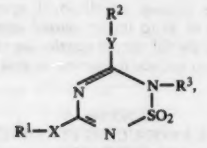
Filed Apr. 7, 1981, Ser. No. 251,921

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016825

Int. Cl.³ C07D *285/00*; A01N *43/72*

U.S. Cl. 71—91 **2 Claims**

1. A 6H-1,2,4,6-thiatriazine-1,1-dioxide of the formula



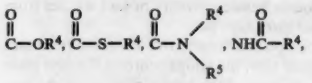
I

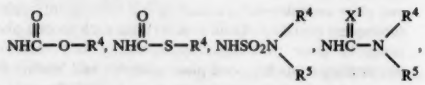
where

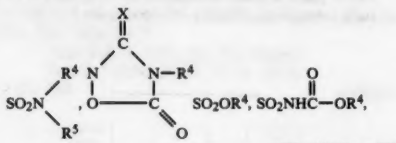
R^1 and R^2 independently of one another are a saturated or unsaturated straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched saturated or unsaturated aliphatic radical of 3 to 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted aliphatic radical of 2 to 10 carbon atoms or a cycloalkoxy-substituted aliphatic radical of 4 to 10 carbon atoms,

R^1 may also be unsubstituted or halogen-, lower alkyl- or lower alkoxy-substituted phenyl, unsubstituted or halogen-substituted benzyl or tetrahydrofurylmethyl,

R^2 may also be a halogen-, alkoxy-, dialkylketone- or alkylmercapto-substituted unsaturated aliphatic radical or a dialkylketone-substituted aliphatic radical of 3 to 10 carbon atoms, lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto, lower alkylmercapto-carbo-lower alkylmercapto, aryl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy, lower alkylmercapto, halo-lower alkylmercapto, lower alkylsulfinyl, halo-lower alkylsulfinyl, lower alkylsulfonyl, halo-lower alkylsulfonyl, nitro, cyano, azido, carboxyl, SCN,



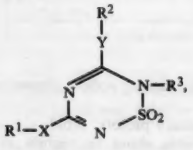




CH=NOH or CHO,

or by lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto or lower alkylmercapto-carbo-lower alkylmercapto; or R^2 may also denote benzyl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy or halo-lower alkylmercapto, R^3 is hydrogen, a straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched aliphatic radical of 3 to 10 carbon atoms or halogen- or alkoxy-substituted alkyl of 2 to 10 carbon atoms, R^4 and R^5 are lower alkyl and R^5 may also be hydrogen, X and Y are oxygen, sulfur, sulfinyl or sulfonyl and X^1 is oxygen or sulfur.

2. A process for combating the growth of unwanted plants, which comprises applying to the plants or the locus of the plants a herbicidally effective amount of a 6H-1,2,4,6-thiatriazine-1,1-dioxide of the formula



I

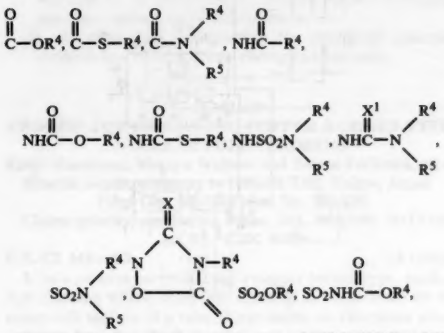
where

R^1 and R^2 independently of one another are a saturated or unsaturated straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched saturated or unsaturated aliphatic radical of 3 to 10 carbon atoms, a halogen-, alkoxy- or alkylmercapto-substituted aliphatic radical of 2 to 10 carbon atoms or a cycloalkoxy-substituted aliphatic radical of 4 to 10 carbon atoms,

R^1 may also be unsubstituted or halogen-, or lower alkyl- or lower alkoxy-substituted phenyl, unsubstituted or halogen-substituted benzyl or tetrahydrofurylmethyl,

R^2 may also be a halogen-, alkoxy-, dialkylketone- or alkylmercapto-substituted unsaturated aliphatic radical or a dialkylketone-substituted aliphatic radical of 3 to 10 car-

bon atoms, lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto, lower alkylmercapto-carbo-lower alkylmercapto, aryl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy, lower alkylmercapto halo-lower alkylmercapto, lower alkylsulfinyl, halo-lower alkylsulfinyl, lower alkylsulfonyl, halo-lower alkylsulfonyl, nitro, cyano, azido, carboxyl, SCN,



CH=NOH or CHO,

or by lower alkoxy-carbo-lower alkoxy, lower alkylmercapto-carbo-lower alkoxy, lower alkoxy-carbo-lower alkylmercapto or lower alkylmercapto-carbo-lower alkylmercapto; or R^2 may also denote benzyl which is unsubstituted or substituted by halogen, lower alkyl, halo-lower alkyl, lower alkoxy, halo-lower alkoxy or halo-lower alkylmercapto,

R^3 is hydrogen, a straight-chain aliphatic radical of 1 to 10 carbon atoms, a cycloaliphatic radical of 3 to 7 carbon atoms, a branched aliphatic radical of 3 to 10 carbon atoms or halogen- or alkoxy-substituted alkyl of 2 to 10 carbon atoms,

R^4 and R^5 are lower alkyl and R^5 may also be hydrogen,

X and Y are oxygen, sulfur, sulfinyl or sulfonyl and

X^1 is oxygen or sulfur.

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HERBICIDE ANTIDOTES

Philip B. Sweetser, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1980, Ser. No. 207,734

Int. Cl.³ A01N *25/32*

U.S. Cl. 71—93 **15 Claims**

1. An herbicidal composition comprising an herbicidally effective amount of an herbicidal compound selected from 2-chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)aminocarbonyl]benzenesulfonamide and 2,5-dichloro-N-[(4,6-dimethoxypyrimidin-2-yl)aminocarbonyl]benzenesulfonamide and a non-phytotoxic antidotally effective amount of an antidotal compound selected from 1,8-naphthalic anhydride, α-(cyanomethoxyimino)benzacetonitrile, and N,N-diallyl-2,2-dichloroacetamide.

4,343,650

METAL BINDER IN COMPACTION OF METAL POWDERS

Ronald D. Rivers, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Apr. 25, 1980, Ser. No. 143,405

Int. Cl.³ B22F *3/00*

U.S. Cl. 75—213 **10 Claims**

1. The method of making a superalloy compact from a substantially noncompactable metal powder, comprising the steps of: providing a substantially noncompactable metal powder; optionally milling said powder: blending said powder with a softer metal-bearing powder; sinterbonding said blended powders; crushing said sinterbonded powders; and compacting said crushed powders said softer metal comprising an element required in the final superalloy.

4,343,651

SINTERED COMPACT FOR USE IN A TOOL

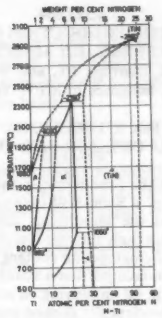
Shuji Yazu, and Akio Hara, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Mar. 31, 1980, Ser. No. 136,459

Claims priority, application Japan, Mar. 29, 1979, 54-37984; Dec. 29, 1979, 54-171512; Mar. 10, 1980, 55-31786

Int. Cl.³ B22F *3/14*

U.S. Cl. 75—238 **6 Claims**



1. A sintered compact for use in a tool consisting essentially of:

80 to 95 volume % of high pressure form boron nitride having an average particle size of less than 10 microns,

the balance being a matrix comprising at least one binder material selected from the group consisting of a carbide, a nitride, and a carbonitride of a IVb and Vb transition metal in the Periodic Table, mixtures thereof and their solid solution compounds; and aluminum compounds, wherein the content of aluminum in said matrix is 5 to 30 weight %, and wherein the particles in said matrix are of a size of less than one micron.

4,343,652

CHROMOGEN SOLUTIONS FOR PRESSURE-SENSITIVE MARK-RECORDING SYSTEMS

Pierre J. Allart, Brussels, and Claude A. Guillaume, Jodoigne, both of Belgium, assignors to Monsanto Europe S.A., Brussels, Belgium

Filed Aug. 18, 1980, Ser. No. 179,415

Claims priority, application United Kingdom, Aug. 24, 1979, 7929566

Int. Cl.³ B41M *5/16, 5/22*; C09D *11/00*

U.S. Cl. 106—21 **4 Claims**

1. A solution for use in a pressure-sensitive mark-recording system comprising:

a. a chromogen that is a derivative of diphenylmethanol or diphenylmethylamine; and

b. a diester solvent having the formula

$$ROOC(C_nH_{2n})COOR'$$

wherein R is a benzyl or alkylbenzyl group, R' is an aliphatic or cycloaliphatic hydrocarbon group or a benzyl or alkylbenzyl group, and n has a value of from 1 to 10.

4,343,653

COMPLETELY OXIDIZED SULFUR BLACK 1 FOR INK

Bradley L. Beach, Lexington, Ky.; Paul D. Gates, San Francisco, Calif., and Vaughn J. Schum, Jr., Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 17, 1981, Ser. No. 255,075
Int. Cl.[3] C09D *11/02*
U.S. Cl. 106—22 8 Claims

1. Water soluble Sulfur Black 1 substantially completely oxidized at the solubilizing groups, substantially free of other Sulfur Black 1, and suitable for incorporation in an aqueous printing ink to provide an imaging capability to said aqueous printing ink.

2. An aqueous jet ink having dye consisting essentially of at least one dye of said completely oxidized Sulfur Black 1 as described in claim 1.

4,343,654

PROCESS FOR THE PRODUCTION OF CORRUGATED PAPERBOARD ADHESIVE

Franklyn O. Ware, Danville, Ill., and William S. McDonald, Statesville, N.C., assignors to MPW Tech. Associates, Danville, Ill.

Filed Feb. 8, 1980, Ser. No. 119,904
Int. Cl.[3] C08L *3/10, 3/20;* C09J *3/06*
U.S. Cl. 106—213 10 Claims

1. A method for the production in the starch kitchen of a corrugating plant of a Stein-Hall composite adhesive whose carrier portion has the high solids content conventionally achieved only with a high amylose starch, employing a starch having a substantial amylopectin content, which comprises (a) employing in the cooked portion a starch having a substantial amylopectin content; (b) employing an amount of the starch in the slurry used to produce the cooked portion in excess of that which would produce a viscosity low enough, if the slurry were cooked conventionally, to be acceptable for use in a Stein-Hall composite adhesive; and (c) cooking the slurry at an alkaline pH, in the presence of an amount of hydrogen peroxide, in a weight ratio to the starch of from about 300:1 to 600:1, which is sufficient to lower the viscosity of the cooked carrier to that of conventional Stein-Hall carriers and in the presence of an amount of a catalyst, in a weight ratio of H_2O_2 to catalyst of about 15:1 to 40:1, which is effective to reduce the cooking time required to reach that viscosity to about 15 minutes or less.

4,343,655

INSOLUBILIZERS FOR BINDERS FOR PAPER COATING COMPOSITIONS

John A. Dodd, and Robert L. Lane, both of Rock Hill, S.C., assignors to Sun Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 92,631, Nov. 8, 1979, abandoned. This application May 20, 1981, Ser. No. 265,609
Int. Cl.[3] C08B *31/00;* C08L *3/00*
U.S. Cl. 106—214 7 Claims

1. A paper coating composition comprising a pigment, a binder, and as an insolubilizer for the binder the partially or wholly alkylated product of the reaction of approximately stoichiometric amounts of glyoxal and at least one cyclic urea.

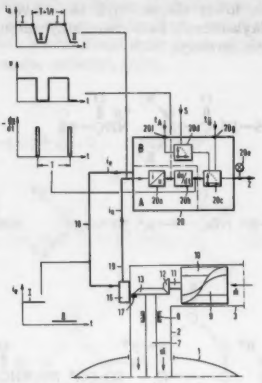
4,343,656

PROCESS FOR MONITORING TANK INSIDE CLEANERS DRIVEN BY CLEANSERS

Otto A. P. Tuchenhagen, Berliner Strasse 10, D-2059 Büchen, Fed. Rep. of Germany

Filed Apr. 23, 1980, Ser. No. 142,993
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916468
Int. Cl.[3] B08B *9/04*
U.S. Cl. 134—18 7 Claims

1. In a process for monitoring of cleanser-powered tank interior cleaners including a revolving rotary element forming part of a cleanser feed path to at least one discharge nozzle and indicating the completion of each full revolution of the rotary element, the improvement comprising positively driving the rotary element by driving the blades of a turbine with flowing solvent and by drive means interconnecting the turbine and the



rotary element within the cleanser feed path and simultaneously monitoring the solvent quantity made available per unit of time and rate of revolution of the rotary element by sensing the rate of rotation in the cleanser feed path of the drive means between the turbine and the rotary element.

4,343,657

PROCESS FOR PRODUCING A SEMICONDUCTOR DEVICE

Takashi Ito, Kawasaki; Hajime Ishikawa, Yokohama, and Masaichi Shinoda, Sagamihara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 31, 1980, Ser. No. 174,134
Claims priority, application Japan, Jul. 31, 1979, 54-97659
Int. Cl.[3] H01L *21/22*
U.S. Cl. 148—1.5 27 Claims

1. A process for producing a semiconductor device comprising the steps of:

selectively forming a silicon nitride film on a silicon semiconductor body by a direct reaction with nitrogen in a nitrogen-containing atmosphere;

selectively forming a covering layer on said silicon nitride film the covering layer comprising one of silicon and a metal silicide; and

exposing said covering layer and said silicon nitride film to a gaseous oxidation medium.

4,343,658

INHIBITION OF CARBON ACCUMULATION ON METAL SURFACES

Rees T. K. Baker, Murray Hill, and James J. Chludzinski, Rahway, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 14, 1980, Ser. No. 139,843
Int. Cl.[3] C23C *9/00*
U.S. Cl. 148—6.3 8 Claims

1. A method for protecting one or more surfaces of a metal substrate against carbon accumulation wherein the metal surface is one which is susceptible to carbon accumulation when exposed to an environment wherein carbon-containing gases are undergoing decomposition, which method comprises:

(a) depositing, on the metal substrate surfaces to be protected, one or more materials selected from the group consisting of tungsten, tantalum, or a compound which

will decompose at the temperature at which the metal substrate is heated in (b) below, to leave tungsten or tantalum on the metal substrate; and

(b) heating the metal substrate to a temperature of from about 600° C. to 1200° C., in an oxidizing atmosphere, for an effective amount of time, thereby driving tungsten and/or tantalum into the substrate surface, so that the growth of carbon filaments on the substrate surface is inhibited by a factor of at least four, relative to an unprotective surface of the same substrate, when the substrate is exposed to an environment wherein carbon-containing gases are undergoing decomposition,

(c) and after step (b) exposing the protected substrate surfaces to a carbon accumulating environment.

4,343,659

PROCESS FOR PRODUCING COPPER BARRIER TYPE, NUCLEAR FUEL CLADDING

Kanji Murakami; Motoyo Wajima, and Tetsuo Ishikawa, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,439
Claims priority, application Japan, Oct. 26, 1979, 54/137760
Int. Cl.³ C23C *3/02*
U.S. Cl. 148—6.3 **13 Claims**

1. In a process for producing a copper barrier type, nuclear fuel cladding which comprises forming an oxide layer on the inner wall surface of a tube of zirconium or zirconium alloy, and then applying electroless copper plating to the oxide layer with a plating solution containing at least a copper salt, a complexing agent, and a reducing agent, the improvement wherein the plating solution also contains 2,2'-dipyridyl at a concentration of at least about 2.5 mg/l and the copper plating is applied to a thickness greater than 5 μm.

4,343,660

CORROSION INHIBITING SYSTEM

Richard L. Martin, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Apr. 7, 1978, Ser. No. 894,292
Int. Cl.³ C23F *7/00*
U.S. Cl. 148—6.14 R **8 Claims**

1. A process of inhibiting copper corrosion of buried copper transmission cable which comprises treating the copper with a composition containing a barrier corrosion inhibitor and a copper complexing agent, where the barrier corrosion inhibitor is a substantially water-insoluble organic sulfonate and the copper complexing agent is a sulfur, nitrogen, or sulfur-nitrogen compound capable of complexing with copper, said barrier corrosion inhibitor being present in an amount sufficient to coat the copper to a thickness of from about 0.0001" to 0.100" and the weight ratio of barrier corrosion inhibitor to copper complexing agent is from about 100:1 to 1:100.

4,343,661

METHOD OF MAKING A LOW TEMPERATURE BAINITE STEEL ALLOY GEAR

Stuart L. Rice, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

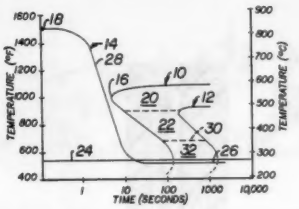
Division of Ser. No. 965,534, Nov. 15, 1978, Pat. No. 4,225,365. This application Apr. 21, 1980, Ser. No. 142,326
Int. Cl.³ C21D *1/20, 9/32*
U.S. Cl. 148—134 **6 Claims**

1. A method of making a low temperature bainite steel alloy gear comprising:

Step (a) forming a gear having a plurality of gear teeth thereon of alloy steel consisting essentially of carbon in the range of 0.60 to 0.80 wt. %, manganese in the range of 0.45 to 1.00 wt. %, silicon in the range of 0.15 to 2.20 wt. %, and molybdenum in the range of 0.40 to 0.70 wt. %, preferably but not essentially boron, and the balance substantially iron;

Step (b) heating the gear to a preselected first temperature forming a substantially complete austenite morphology;

Step (c) quenching the gear toward a preselected second temperature at a rate sufficient to avoid transformation until a preselected lower range of temperatures is reached; and



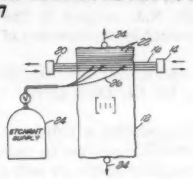
Step (d) holding the gear at the second temperature for less than about two hours and transforming the morphology thereof directly from austenite to substantially complete lower temperature bainite.

4,343,662

MANUFACTURING SEMICONDUCTOR WAFER DEVICES BY SIMULTANEOUS SLICING AND ETCHING

Charles F. Gay, Tujunga, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 31, 1981, Ser. No. 249,321
Int. Cl.³ H01L *21/22, 21/304, 21/306*
U.S. Cl. 148—187 **15 Claims**



8. A method of manufacturing semiconductor devices, comprising the steps of:

providing an ingot of semiconductor material;

mechanically slicing partially through said ingot at a plurality of locations therealong to form a plurality of cuts in the material; and

etching material from said ingot in the region of said slicing during said slicing.

9. The method as defined in claim 8 wherein said semiconductor material is of a first conductivity type, and including the additional step of:

diffusing an active impurity of an opposite conductivity imparting type into said ingot to form ingot material of the opposite conductivity type.

10. The method as defined in claim 9 including the additional step of removing ingot material of said opposite conductivity type from the outside surface of said ingot.

4,343,663

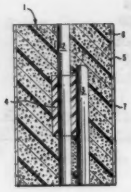
RESIN-BONDED WATER-BEARING EXPLOSIVE

Cyril J. Breza, deceased, late of Hagerstown, Md. (by Therese H. Breza, executrix), and William E. Schaefer, Hagerstown, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 30, 1980, Ser. No. 164,143
Int. Cl.³ C06B *45/18*
U.S. Cl. 149—4 **31 Claims**

1. A self-supporting water-bearing explosive product comprising

(a) a mass of crosslinked organic resin as a fuel component forming a continuous matrix;
(b) an aqueous solution of at least one salt of an inorganic oxidizing acid as an oxidizer component forming a discontinuous phase emulsifyingly dispersed within, and encapsulated by, said continuous matrix, said salt being derived



from nitric or perchloric acid and a base selected from the group consisting of ammonia, amines, and alkali and alkaline-earth metal hydroxides; and
(c) dispersed in said matrix and/or said aqueous solution, a sensitizer adapted to induce or enhance the detonability of said solution-containing resin matrix; said product having a density of at least about 1.0 gram per cubic centimeter.

4,343,664

PRODUCTION OF POLYMER BONDED NITRAMINE EXPLOSIVE AND PROPELLANT COMPOSITIONS

Sury Iyer, Randolph, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 6, 1981, Ser. No. 251,635
Int. Cl.³ C06B *45/22*
U.S. Cl. 149—11 **9 Claims**

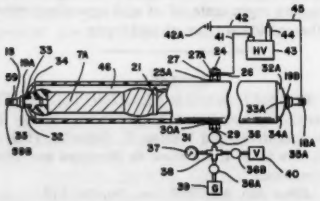
1. A process for producing a polymer bonded nitramine explosive or propellant composition by radiation polymerization of a polymer precursor in mixture with a particulate nitramine component which inhibits or retards such radiation polymerization, which comprises coating the nitramine particles with an effective amount of a liquid polyhydric alcohol for overcoming the action of the nitramine to inhibit or retard such radiation polymerization.

4,343,665

METHOD FOR MANUFACTURING SF_6 PRESSURIZED GAS CONTINUOUS SPACER CABLE

Paul F. Pugh, 4082 Sequoyah Rd., Oakland, Calif. 94605

Filed Oct. 15, 1979, Ser. No. 67,062
Int. Cl.³ H01B *13/08, 17/36*
U.S. Cl. 156—48 **2 Claims**



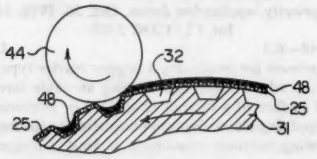
1. A method for manufacturing a pre-finished continuous non-impregnated paper spacer gas pressurized cable, including a conduit and terminations, comprising the steps of:
wrapping said continuous spacer around a conductor;
wrapping a metallic electrical shielding material around said spacer;
inserting said conductor, said spacer, and said shielding material into a fixed long length of non-metallic conduit;
sealing said conduit at each end about said conductor to form said terminations;
and then filling said conduit and said continuous spacer with said gas.

4,343,666

METHOD OF MAKING TOOTHED BELT

Robert E. Wetzel, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Continuation of Ser. No. 110,032, Jan. 7, 1980, abandoned, which is a division of Ser. No. 957,280, Nov. 2, 1978, Pat. No. 4,235,119. This application Dec. 16, 1980, Ser. No. 217,261
Int. Cl.³ B29H *7/22*
U.S. Cl. 156—138 **6 Claims**



1. A method for making a positive drive power transmission belt having a plurality of alternating grooves and teeth which comprises the steps of:
(a) wrapping a tooth covering fabric around a cylindrical mold which has circumferentially spaced alternating axial grooves and ridges;
(b) wrapping a layer of fiber-loaded elastomeric material around said covering fabric;
(c) applying pressure in helical fashion against said elastomeric layer with a pressure-applying member to force at least a portion of both said fiber-loaded elastomeric material and said fabric into said axial grooves and to move a portion of said fiber-loaded elastomeric material away from said fabric in the area of said ridges to allow a later-wound load-carrying cord to lie against said fabric in said area of said ridges;
(d) winding a load-carrying cord in helical fashion and in a plurality of turns against said layer of said fiber-loaded elastomeric material;
(e) wrapping a layer of elastomeric material over said load-carrying cord to define an assembly; and
(f) vulcanizing the assembly under heat and pressure,
wherein said pressure applying step (c) and said winding step (d) are carried out simultaneously with said cord being helically wound on a next succeeding turn following said application of pressure in said helical fashion.

4,343,667

METHOD FOR MAKING AN INDEFINITE LENGTH COMPOSITE SHEET OF VERY LARGE PREDETERMINED WIDTH FROM INDEFINITE LENGTH SHEET STOCK OF RELATIVELY SMALL WIDTH

Jack L. Hollis, Mechanicsburg, Pa., assignor to Carlisle Tire & Rubber Company, Div. of Carlisle Corp., Carlisle, Pa.

Division of Ser. No. 140,815, Apr. 16, 1980, which is a continuation-in-part of Ser. No. 20,133, Mar. 13, 1979, abandoned. This application Apr. 20, 1981, Ser. No. 255,894
Int. Cl.³ B32B *31/18*
U.S. Cl. 156—157 **35 Claims**

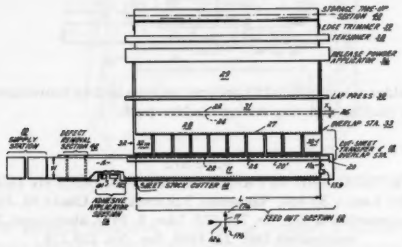
1. A method for automatically manufacturing composite

sheets of predetermined selective width and indefinite length, from stock sheet of known width and indefinite length, which includes:

(a) feeding in a first horizontal direction along a first path stock sheet of known width and indefinite length from a supply thereof, said first path being in nonoverlapping relation to said composite sheet and spaced therefrom in a direction parallel to the length of said composite sheet,

(b) thereafter preparing from said fed stock, while horizontally disposed along said first path in said first direction, a horizontally disposed predetermined length of said stock sheet having adhesive properties in a zone on a face of the length of stock sheet along an edge thereof, said predetermined length being a substantial multiple of said known width of said stock and at least equal to said predetermined selective width of said composite sheet,

(c) moving said horizontally disposed predetermined length of sheet a predetermined distance along a second path in a second horizontal direction which is transverse to said



first horizontal direction of feeding of said stock sheet to an overlap station which is transversely horizontally displaced from said first path a distance at least equal to said predetermined distance, said predetermined distance at least exceeding said known width of said indefinite length stock sheet, said moving of said predetermined length sheet occurring subsequent to feed-out thereof along said first path in said first direction and prior to preparing a successive predetermined length sheet,

(d) repeating steps (a), (b) and (c) to form a composite sheet, the movement of only step (c) being such that the second length of cut sheet overlaps and contacts the first length of sheet along an overlap zone to form a lap joint with the prior cut length of sheet, said lap joint including the adhesive zone of at least one of said overlapping sheets,

(e) moving said first and second overlapped lengths of sheets in unison further in said transverse direction along a third path by an incremental distance equal to about the width of said stock sheet less the width of said zone, and

(f) thereafter repeating steps (b) and (c) and (e).

4,343,668

METHOD OF PRODUCING BUNDLES OF HOLLOW FIBRES POTTED AT THEIR ENDS

Jacques Francisoud, Oullins, and Christian Ollivier, Vienne, both of France, assignors to Hospal Sodip SA, Meyzieu, France

Filed Jun. 1, 1981, Ser. No. 269,380
Claims priority, application France, Jun. 4, 1980, 80 12699
Int. Cl.³ B65H *54/02, 81/00*
U.S. Cl. 156—172 **10 Claims**

1. A method of simultaneously producing a plurality of bundles of hollow fibres potted at their ends, said method comprising the steps of:

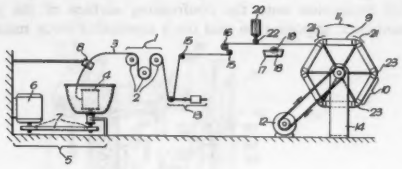
(a) providing a wheel having a polygonal periphery;

(b) mounting a channel on each side of the wheel, with the open side of the channel facing radially outwardly;

(c) rotating the wheel about its axis;

(d) feeding at least one hollow fibre, so that it is engaged in each channel as the wheel rotates and a bundle of fibres is built up in each channel;

(e) applying glue at spaced intervals to said at least one fibre upstream of the point at which it engages in the first channel mounted on the wheel, the glue applied to the



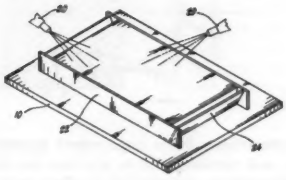
fibres serving to pot the fibres at at least one point in each channel as the fibres build up in each channel; and

(f) after the desired number of fibres has been built up in each channel, cutting the fibres at points near to where the fibres have been potted.

4,343,669

BUILDING COMPONENT AND METHOD OF MAKING THE SAME

John C. Prior, c/o Industrial Salvage, Centralia, Ill. 62801
Division of Ser. No. 826,323, Aug. 22, 1977, abandoned. This application Oct. 17, 1979, Ser. No. 85,581
Int. Cl.³ B29C *17/02;* B32B *1/06*
U.S. Cl. 156—212 **1 Claim**



1. A method of making a building component comprising the steps of:

(a) placing a bottom layer on a work surface,

(b) preforming a sidewall form,

(c) placing said sidewall form on top of the bottom layer,

(d) placing core material in the sidewall form,

(e) placing a top layer on the sidewall form,

(f) applying a plastic binder reinforced with fiber strand particles to the upper, lower and side surfaces to provide a substantially rigid exterior skin completely sealing and adhering the parts together,

(g) providing a flat sheet for the bottom layer,

(h) extending portions of the bottom sheet outwardly of the sidewall form,

(i) folding the outwardly extending sheet portions into overlapping relation with the sidewall form, and

(j) applying plastic binder reinforced with fiber strand particles to the folded portions.

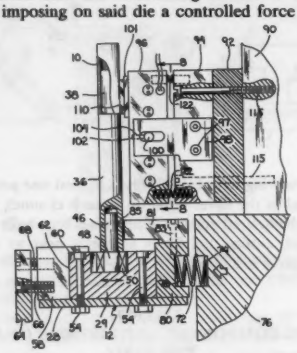
4,343,670

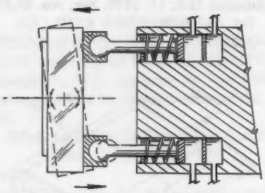
APPARATUS AND PROCESS FOR HOT-STAMPING CONTAINERS

Robert Brown, New York, N.Y., assignor to Rheological Systems, Inc., West Babylon, N.Y.
Filed Dec. 5, 1979, Ser. No. 100,334
Int. Cl.³ B44C *31/00;* B32B *31/00;* C09J *5/00*
U.S. Cl. 156—233 **11 Claims**

1. A method for hot-die transfer of metal or pigmented foil

material onto circular plastic containers, comprising the steps of: mounting for individual rotation a series of such plastic containers onto spaced mandrels, indexing a substantially continuous sheet foil of predetermined length past a heated die which includes a die plate having means providing a substantially free universal movement of said die, said die plate providing information intended to be transferred as a permanent foil lamination onto the confronting surface of the plastic container, imposing on said die a controlled force matrix ef-





fecting substantially linear engagement between the plastic container and opposing die as the two are engaged under critical temperature and pressure to effect viscoelastic conditions on the surface of the container, said foil being compressed between the plastic container and die during such critical viscoelastic conditions, translating the container on the mandrel across the face of the die while permitting relatively free rotation thereof, and hot pressing the foil permanently onto the confronting surface of the container.

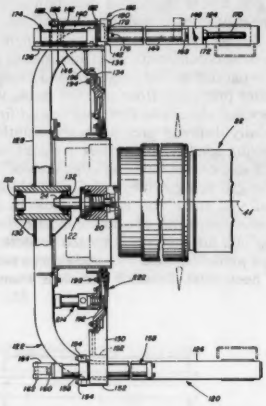
4,343,671

TIRE BUILDING MACHINE

George E. Enders, Salem, Ohio, assignor to NRM Corporation, Akron, Ohio

Filed Jul. 18, 1980, Ser. No. 170,021
Int. Cl.³ B29H *17/26*
U.S. Cl. 156—401 **31 Claims**

1. A tire building machine comprising a tire building drum adapted to receive tire plies wrapped thereabout with the edges of the plies extending beyond the ends of the drum, an inflatable annular bladder extending axially outwardly from one end of said drum, an annular support for said bladder, and a bead setter and bladder pusher mechanism at said one end of said drum and movable axially of said drum selectively to set a bead in proper position on said drum and to push the bladder when inflated to cause the ply edges to be wrapped around the bead and stitched securely; said mechanism including a bead setting and bladder pushing ring, said ring having an axially inner face adapted for selective engagement with the tire bead and bladder, a short radially inner annular surface extending axially outwardly from said face for restricting expansion of a portion of the bladder rearwardly of said face when inflated, and a rounded inner peripheral edge forming a bead projecting beyond said annular surface at said face adapted to grip the



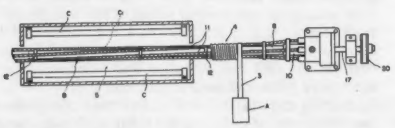
bladder when inflated to prevent relative sliding movement of the bladder and ring during bladder push.

4,343,672

METHOD AND APPARATUS FOR PRODUCING TUBE

Shiro Kanao, 32-460, Nanpeidai, Takatsuki-shi, Osaka-fu, Japan

Continuation of Ser. No. 776,033, Mar. 9, 1977, abandoned. This application Dec. 22, 1980, Ser. No. 219,275
Claims priority, application Japan, May 14, 1976, 51-55605; May 14, 1976, 51-55608
Int. Cl.³ B31C *1/00*
U.S. Cl. 156—428 **17 Claims**



1. An apparatus for continuously producing a tube comprising:

a former (B) supported by a frame (9) in the manner of a cantilever for helically winding thereon a strip (3) of synthetic resin and unvulcanized rubber incorporating a vulcanizing agent to shape the strip (3) into a tubular body (4) and send the tubular body (4) toward a free end of said former (B),

heating means (C1 and C2) for heat-treating the tubular body (4) to 170° C. to 220° C. during movement of said strip toward said free end,

characterized in that said heating means (C1 and C2) are disposed at least inside and outside said former (B) extending along its length and constructed to heat the tubular body (4) from inside and outside to a temperature of from about 170° C. to about 220° C. for vulcanization thereof, said heating means comprising a nichrome wire heater (21) incorporated in a metal core (8) of the former (B),

the former (B) including a plurality of feed rollers (11) helically arranged and retained by a plurality of retainers (12) secured to the metal core (8) and arranged from a supported end of the metal core toward a free end thereof,

said retainers (12) being formed with recesses (13) for retaining said feed rollers (11) and are arranged from the supported end of the metal core (8) toward the free end thereof with the phase of each of the retainers (12) dis-

placed by a specified angle (θ) from retainer to retainer, the retainers being securable to the metal core in the displaced positions, whereby the helical pitch of the feed rollers (11) is freely determinable, and

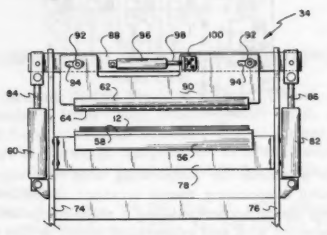
a cooling water nozzle (6) disposed on one side of the heating means (C1) toward which the tubular body (4) is sent out to thereby cool the tubular body (4) immediately after the vulcanization heat treatment.

4,343,673

BINDING APPARATUS AND METHOD

Robert C. Smith, Jr., and James A. McGlen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 22, 1979, Ser. No. 13,869
Int. Cl.³ B30B 7/04
U.S. Cl. 156—583.4 **13 Claims**



1. Binding apparatus for securing together a plurality of sheets having a heat-sealable material between adjacent surfaces of the sheets, the apparatus comprising:

means for supporting the sheets with the material between adjacent sheets;

a heating bar having a surface;

means for heating the surface of said bar;

means for moving said bar relative to said supporting means a plurality of times between (1) a first position wherein the bar is spaced from said supporting means by a distance that allows movement of sheets into and out of said supporting means and (2) a second position wherein the bar is located with respect to said supporting means to transfer sufficient heat to material between sheets supported by the supporting means to secure sheets together; and

means for shifting the heating bar laterally relative to the supporting means while the bar is in its first position so that the heating bar can transfer heat to two different portions of the material between sheets in the supporting means when the bar is moved between its two positions a plurality of times.

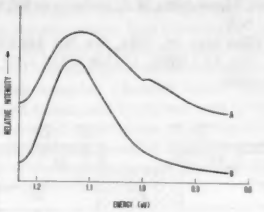
4,343,674

MONITORING INDIUM PHOSPHIDE SURFACE COMPOSITION IN THE MANUFACTURE OF III-V SEMICONDUCTOR DEVICES

Bulusu V. Dutt, Parsippany; Vassilis G. Keramidas, Warren, and Henryk Temkin, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 16, 1981, Ser. No. 244,130
Int. Cl.³ C30B 19/10
U.S. Cl. 156—601 **9 Claims**

1. A process for manufacturing III-V semiconductor devices, said process including the production of material which consists essentially of n-type indium phosphide, said process including determining indium-to-phosphorus ratio in at least a portion of a surface of said material by (1) irradiating said portion of a surface with electromagnetic radiation which is here designated as first electromagnetic radiation and which has a spectral component whose energy is larger than the energy of the bandgap of indium phosphide, and (2) monitoring the intensity of electromagnetic radiation which is here designated as second electromagnetic radiation and which



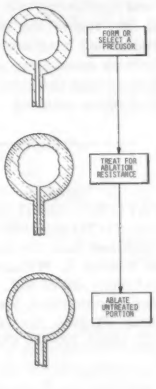
emanates from said portion, monitoring being in at least a portion of the energy interval from 0.90 to 1.05 electron volt.

4,343,675

METHOD OF MANUFACTURING HOLLOW MEMBERS HAVING UNIFORM WALL THICKNESS THROUGH USE OF ABLATION

Paul R. Anderson, Toledo, Ohio; Raymond L. Downs, and Timothy M. Henderson, both of Ann Arbor,, Mich., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 30, 1980, Ser. No. 192,272
Int. Cl.³ C03C 15/02
U.S. Cl. 156—628 **29 Claims**



1. A method of producing hollow objects having interior and exterior wall surfaces of predetermined uniform geometry separated by material of uniform desired thickness extending between said surfaces, said method comprising the steps of:

(a) selecting as a precursor a hollow object having one said wall surface of desired geometry and dimension, and a thickness between said one surface and the other of said surfaces at all points no less than said desired thickness,

(b) treating a portion of said precursor consisting of said one surface and a uniform depth of material beneath said one surface corresponding to said desired thickness so as to increase resistance of said portion to ablation, and then

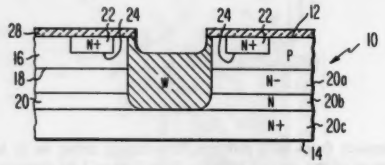
(c) removing the remainder of said precursor unaffected in said step (b) by subjecting said other surface to an ablation process to leave a product having a uniform thickness corresponding to said depth of material beneath said one surface and a uniform geometry corresponding to said desired geometry of said one wall surface and said uniform thickness.

4,343,676

ETCHING A SEMICONDUCTOR MATERIAL AND AUTOMATICALLY STOPPING SAME

Ming L. Tarng, Mercerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1981, Ser. No. 248,035
Int. Cl.³ H01L 21/306; C23F 1/02
U.S. Cl. 156—628 10 Claims



1. A method of etching material from one surface of a silicon substrate formed with a first region adjacent said one surface and a second region spaced from said one surface, said second region being doped with N type impurity atoms in a concentration high enough to significantly retard a chemical reaction between the silicon and a refractory metal hexafluoride, said method comprising:

masking said one of said surfaces to expose a surface area of said substrate where said silicon is to be etched;

exposing said substrate to a gaseous refractory metal hexafluoride at a temperature of at least about 550° C. whereby said hexafluoride reacts with the silicon in said first region to replace the silicon with the refractory metal of said hexafluoride, and maintaining said reaction until all of the silicon in said first region has been replaced with the refractory metal of said hexafluoride; and

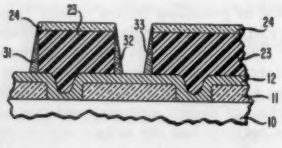
etching said refractory metal from said first region of said substrate with an etchant that does not substantially react with the semiconductor material.

4,343,677

METHOD FOR PATTERNING FILMS USING REACTIVE ION ETCHING THEREOF

Eliezer Kinsbron, Highland Park; Hyman J. Levinstein, Berkeley Heights, and William E. Willenbrock, Jr., Manchester Township, Ocean County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 23, 1981, Ser. No. 246,690
Int. Cl.³ B44C 1/22; H01L 21/306; C03C 15/00; C23F 1/02
U.S. Cl. 156—643 22 Claims



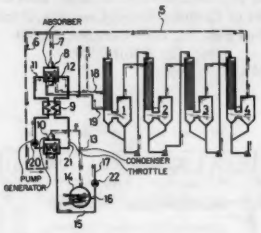
1. In a method of processing a film, said film having a major surface coated with a layer of substance and said method including selectively etching the film using as a selective etch mask a patterned organic layer which has been patterned with windows, said windows formed by means of a first reactive ion etching step whereby said windows penetrate through the organic layer to the layer of substance, the step of removing build-ups of compounds of the substance from sidewalls of the windows prior to said selectively etching the layer of substance.

4,343,678

MULTI-STAGE EVAPORATING APPARATUS WITH INTEGRATED HEAT REGENERATING SYSTEM

Paul Franzen, Koblenz, Fed. Rep. of Germany, assignor to Maschinenfabrik Buckau R. Wolf AG, Grevenbroich, Fed. Rep. of Germany

Filed Dec. 12, 1980, Ser. No. 216,604
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951557
Int. Cl.³ B01D 1/26
U.S. Cl. 159—24 A 14 Claims



1. An apparatus for evaporating with heat regeneration, comprising evaporating means arranged to produce vapor; absorbing means accommodating a multi-component mixture and connected with said evaporating means so that the vapor is admitted into said absorbing means and absorbed by said mixture with generation of heat; means for supplying the heat generated in said absorbing means to a consumer; an expeller communicating with said absorbing means so that the mixture, after the absorption of the vapor, is supplied into said expeller, regenerated in the latter by evaporation of the absorbed vapor and supplied back to said absorbing means, said expeller also communicating with said evaporating means so as to utilize condensation heat of the vapor from said evaporating means for regeneration of the mixture in said expeller; and means for liquefying the evaporated vapor from said expeller under the action of low temperature.

4,343,679

PROCESS FOR RECLAIMING WASTE PAPER

Jean De Ceuster, Vilvoorde, and Paul Duprez, Brussels, both of Belgium, assignors to Interox (Societe Anonyme), Brussels, Belgium

Filed Oct. 23, 1980, Ser. No. 199,815
Claims priority, application France, Oct. 23, 1979, 79 26581
Int. Cl.³ D21C 5/02
U.S. Cl. 162—4 10 Claims

1. Process for reclaiming waste paper comprising pulping without deinking the waste paper in the presence of water whose hardness is less than 2 degrees of German hardness and then adding to the pulp thus obtained a compound capable of liberating, in aqueous solution, ions with a positive charge equal to or greater than 2, the adding being to a pulp which is substantially free from anionic surface active agents.

4,343,680

HYDROPHOBIC OLEOPHILIC WOOD PULP

Jasper H. Field, Goshen, and Robert W. Hicks, Warwick, both of N.Y., assignors to International Paper Company, New York, N.Y.

Filed Mar. 6, 1981, Ser. No. 241,337
Int. Cl.³ B01D 39/04
U.S. Cl. 162—100 11 Claims

1. Hydrophobic, oleophilic pulp derived from high yield wood pulp by a process consisting essentially of:

(a) treating high yield wood pulp having at least 3.0% ether extractive content at temperatures of greater than 100° C.

for at least sufficient time until said pulp exhibits 30% or less water absorption when tested by Tappi test T491-Su 63; and

(b) mechanically fluffing the pulp of step a above.

10. A process for the preparation of hydrophobic, oleophilic wood pulp derived from high yield wood pulp which consists essentially of:

(a) treating high yield wood pulp having at least 3.0% ether extractive content at temperatures of greater than 100° C. for at least sufficient time until said pulp exhibits 30% or less water absorption by Tappi Test T491-Su 673; and

(b) mechanically fluffing the pulp of step a above.

11. A process for the removal of oil pollutants from at least a portion of the surface of a body of water which comprises dispersing a fluff pulp as described in claim **1** over at least a portion of the surface of a body of water, said portion of said surface being at least partly covered by oil pollutants, and thereafter removing the pulp with absorbed oil pollutants from the surface of the body of water.

4,343,681

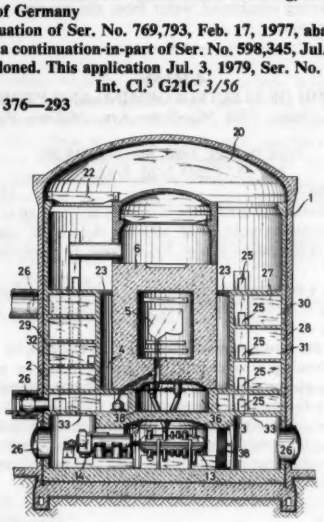
CORE ENERGY PLANT WITH CLOSED WORKING GAS CIRCUIT

Heinrich Clermont, Jülich; Siegfried Förster, Alsdorf; Jürgen Heil, Bensberg; Peter Quell, Haaren; Jasbir Singh, Jülich; Berthold Sack, and Bruno Schröder, both of Aachen, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Continuation of Ser. No. 769,793, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 598,345, Jul. 23, 1975, abandoned. This application Jul. 3, 1979, Ser. No. 54,608

Int. Cl.³ G21C *3/56*

U.S. Cl. 376—293 **6 Claims**



1. A nuclear energy plant having a closed working gas circuit with which the working gas heated up in a reactor core becomes supplied directly to energy generating working turbine machines in which the working gas flows through the turbines as well as the compressors that together with the turbines as a turbo-set form a unitary machine system, which includes the improvement in combination therewith comprising: an outer safety container consisting of prestressed concrete for heating the working gas, and an inner container particularly of economical unprestressed steel concrete and said inner container having an outer cylindrical wall adjacent said outer container and an inner cylindrical wall forming a central recess in which a separate container only of prestressed concrete with a nuclear reactor core is received and supported, said inner container comprising a chamber below said recess housing a working gas driven turbo-set and a plurality of accessible chambers formed by radial walls between said outer and inner cylindrical walls communicating with each other to allow flow of gases between said chambers and surrounding the recess on all sides above the chamber housing the turbo-set in which are located components of the working gas circuit, including heat exchangers, post heat discharge systems, precoolers and gas storage means, heat transferring means, intermediate coolers, and other components, and a horizontal wall closing the tops of said accessible chambers, said wall forming the bottom of an assembly chamber above said accessible chambers and said recess, said horizontal wall having gas-tight closures in said accessible chambers, said closures being movable to allow access to said accessible chambers and removal of components in said chambers to said assembly chamber and out of said outer safety container.

4,343,682

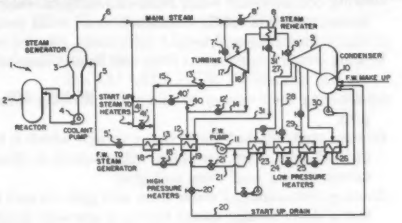
PLANT HAVING FEED WATER HEATING MEANS FOR NUCLEAR UNITS DURING PLANT START UP AND METHOD OF OPERATING THE SAME

Arthur S. Grimes, 148 Wicks Rd., Commack, N.Y. 11725, and Robert S. Hunter, 814 Hudson St., Hoboken, N.J. 07030

Filed Aug. 20, 1980, Ser. No. 179,803

Int. Cl.³ G21C *19/28*

U.S. Cl. 376—214 **5 Claims**

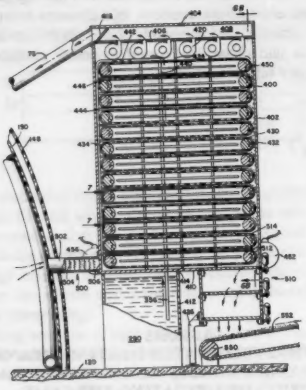


1. A plant having feed water heating means for a nuclear steam supply unit during plant start up where said plant has a nuclear steam supply unit for changing water to steam, a turbine, a main steam delivery line connecting said turbine with said unit, a condenser connected to a discharge of said turbine, a feed water delivery line extending from said condenser to said unit, a feed water pump in said feed water delivery line, at least one high pressure heater in said feed water delivery line between said feed water pump and said unit, a high pressure heater steam delivery line extending between a steam extraction point on said turbine and said high pressure heater, a heater operation valve in said high pressure heater steam delivery line and a drain extending from said high pressure heater; the improvement comprising in having a start up steam line extending from said main steam delivery line to said high pressure heater, and a start up valve in said start up steam line whereby when said start up valve is opened, steam from said main steam delivery line will be admitted to said high pressure heater to heat feed water entering the unit during a plant start up and whereby when said start up valve is closed after plant start up, said operation valve may be opened to admit steam to said high pressure heater from said extraction point.

4,343,683
METHOD FOR DESALINATING WATER

Richard E. Diggs, 12A Rd., Carthage, Mo. 64836

Division of Ser. No. 869,015, Jan. 12, 1978, Pat. No. 4,235,680, which is a division of Ser. No. 625,850, Oct. 28, 1975, Pat. No. 4,118,283. This application May 7, 1980, Ser. No. 147,367
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.³ C02F *1/14*
U.S. Cl. 203—2 **2 Claims**



1. A process for distilling water and separating the water from solids dissolved therein, comprising the steps of:
withdrawing contaminated water from a body of water having solid contaminants dissolved therein;
flowing contaminated water from said body of water into a header which is fluidly connected to an outer peripheral edge of a grid;
flowing contaminated water from said header onto said grid via said header;
transferring solar energy to said water flowing across said grid;
flowing contaminated water into a trough which is located on said grid inner peripheral edge which is fluidly attached to said grid, from said grid;
flowing contaiminated water from said grid via said trough into a water storage means having a side wall attached to said grid trough and having a heat exchange structure connected thereto;
removing contaminated water from said storage means;
transferring water from said trough to said water storage means;
monitoring temperature of water in said water storage means;
transferring only water having a temperature which equals or exceeds a predetermined temperature to said water storage means;
recirculating said water from said trough back to said header prior to transferring water from said trough into said water storage means when the temperature of said water in said trough falls below a predetermined temperature;
flowing water from said heat exchange structure into a vaporizer means connected to said heat exchange structure, and for separating said water from said solid contaminants dissolved therein;
concentrating solar energy on the contaminated water flowing from said heat exchange structure into said vaporizer means;
using solar energy, raising to a second predetermined temperature said contaminated water flowing from said heat exchange structure into said vaporizer;
vaporizing said contaminated water in said vaporizer under vacuum conditions to form water vapor, said vaporizing process comprising the steps of:
providing a vacuum in a chamber,
heating the contaminated water to a predetermined temperature,
spraying said heated water into said chamber, said predetermined temperature being above the saturation temperature corresponding to the pressure in said chamber,
vaporizing said water in said chamber to separate said water from said solid contaminants dissolved therein,
removing said water vapor from said chamber, and
removing said solids from said chamber, whereby said water vapor and said solids are totally separated from each other;
separating said water from solid contaminants in said vaporizer means;
removing said solid contaminants from said vaporizer means;
removing water vapor from said vaporizer means;
transferring said water vapor to a condensing means;
exposing said contaminated water in the vaporizing means to said water vapor and transferring heat from said water vapor to such contaminated water to preheat same;
circulating such preheated contaminated water in a circuitous path;
condensing water vapor and forming distilled water which is free of solid contaminants; and
withdrawing condensed water from the proximity of said water vapor.

4,343,684
METHOD OF ELECTROFORMING AND PRODUCT

Stanley Lechtzin, 7705 Woodlawn Ave., Melrose Park, Pa. 19126

Filed Dec. 19, 1980, Ser. No. 218,275
Int. Cl.³ C25D *1/20, 3/62, 5/50*
U.S. Cl. 204—4 **11 Claims**

1. The method of gold electroforming utilizing an acid electrolyte containing gold or an alkaline electrolyte containing gold at a temperature above 100 degrees F. comprising the steps of
forming a non-metallic substrate to a desired configuration;
applying a metallic shell over at least portions of the substrate;
placing the substrate with shell into the electrolyte;
electroforming at a current density of between approximately eleven amperes per square foot and approximately twenty-five amperes per square foot a self-supporting gold deposit of a first karat over the metallic shell; and
annealing the gold deposit at a temperature in excess of room temperature for a period of at least four hours to remove stresses and brittleness.

4,343,685
PROCESS FOR PREPARING A CHEMICAL COMPOUND ENRICHED IN ISOTOPE CONTENT

Edward D. Michaels, Spring Valley, Ohio, assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

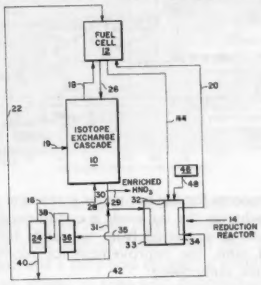
Filed Feb. 25, 1981, Ser. No. 238,711
Int. Cl.³ B01D *59/32;* C25B *1/02, 1/22*
U.S. Cl. 204—101 **6 Claims**

1. An energy-efficient process capable of yielding a chemical compound enriched in isotope content without forming waste by-products, said process comprising the steps of:
(a) countercurrently contacting a first chemical compound with a second chemical compound in a chemical exchanger region to produce an isotopically enriched first compound at one end of the chemical exchange region and an isotopically depleted second compound at the other end of the chemical exchange region, said first and

second chemical compounds being capable of interconversion by oxidation and reduction reactions;

(b) converting the first compound to the second compound at the enriched end of the chemical exchange region, and removing a small portion of the flow as product, while returning the bulk of the flow to the chemical exchange region as reflux;

(c) converting the second compartment to the first compound at the depleted end of the chemical exchange region and removing a small portion of this flow as spent material, while returning the bulk of the flow to the chemical exchange region as reflux, wherein one of said conversion steps is an oxidation reaction and the other of said



conversion steps is a reduction reaction; wherein the oxidation reaction yields energy that serves to drive the reduction reaction; and wherein a solid polymer electrolyte electrolytic reactor is used to carry out the reduction reaction which yields the reduced form of the isotope containing chemical compound and additional chemical products that are subsequently separated from the reduced compound;

(d) cycling the first and second chemical compounds produced by steps (c) and (b), respectively, to the chemical exchange region; and

(e) cycling the additional chemical reduction products to the oxidation reaction for consumption therein.

4,343,686

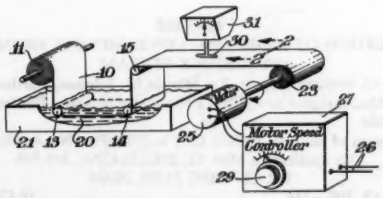
METHOD FOR CONTROLLING ETCHING OF ELECTROLYTIC CAPACITOR FOIL

John R. Hebert, Jr., North Adams; Joseph H. Silveira, Cheshire, and Robert W. Herzig, North Adams, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Feb. 27, 1981, Ser. No. 239,093

Int. Cl.³ C25F *3/02*; H01L *21/306*; B44C *1/22*

U.S. Cl. 204—129.2 **12 Claims**



11. A method for controlling in a foil etching process the ratio of the actual etched surface area to the apparent surface area of a valve metal foil that is intended for use in electrolytic capacitor, comprising:

drawing said foil through an etch station and etching said foil therein by a process having at least one process parameter that affects said actual etched surface area;

electrically exciting a test coil that is adjacent said etched foil near the point of exit from said etching station to generate eddy currents in said etched foil producing an electrical signal having an amplitude that is a fixed function of the magnitude of said eddy currents;

comparing said signal with a predetermined signal representing the desired actual surface area of said etched foil; and

adjusting said at least one parameter, according to the result of said comparing step, in a direction that tends to reduce the difference between said compared signals to control the ratio of said actual to said apparent surface areas.

4,343,687

PRODUCTION OF CHAIN REACTIONS BY LASER CHEMISTRY

Avigdor M. Ronn, Great Neck, N.Y., assignor to Research Foundation of City University of New York, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,170

The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—157.1 R **6 Claims**

1. A process for initiating chain reactions by laser chemistry which comprises mixing in a bounded space at least two compounds of a kind and in amounts capable of sustaining a chain reaction and initiating a reaction therebetween by irradiating the mixture with an infrared laser beam having a frequency not absorbed by said compounds and insufficient to create a spark.

4,343,688

METHOD OF MAKING HUMIDITY SENSORS

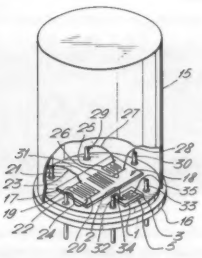
Mervyn G. Harwood, Bromley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,485

Claims priority, application United Kingdom, Nov. 22, 1979, 7940446; Jul. 28, 1980, 8024630

Int. Cl.³ G01N *27/28, 27/42*

U.S. Cl. 204—195 W **4 Claims**



1. A method of making a humidity sensor comprising the steps of:

providing an alumina substrate;

providing a pair of noble metal electrodes on the substrate; and

forming an electrically conductive, moisture-sensitive layer on the substrate between and electrically contacting the electrodes;

characterized in that the moisture-sensitive layer is formed by:

heating the alumina substrate to a temperature in the range of 100° to 750° C. for from 30 hours to ½ hour in order to activate the alumina;

coating at least a portion of the substrate between the electrodes with orthophosphoric acid or phosphorus pentoxide, said coating contacting the electrodes; and

heating the coated substrate to a temperature in the range of 50° to 500° C. for from 30 hours to ½ hour so as to form the electrically conductive, moisture-sensitive layer by a reaction between the alumina and the orthophosphoric acid or phosphorus pentoxide.

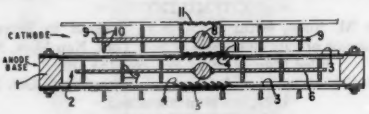
4. A humidity sensor made by the method of claim 1, 2, or 3.

4,343,689

NOVEL ELECTROLYSIS CELL

Oronzio de Nora, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Jul. 12, 1979, Ser. No. 57,255
Claims priority, application Italy, Jul. 27, 1978, 26171 A/78
Int. Cl.³ C25B *13/00, 11/00, 1/26*
U.S. Cl. 204—253 44 Claims



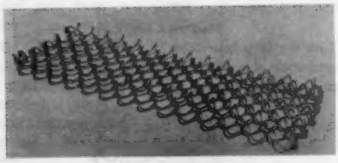
1. An electrolytic cell unit which comprises a flexible ion permeable diaphragm sheet having an anode bonded to one side thereof and a cathode bonded to the other side thereof, flexible anode and cathode foraminous sheets engaging the outer sides respectively of the anode and cathode, said sheets having greater rigidity than the diaphragm, at least one pressure element engaging the anode foraminous sheet to press the assembly together, said anode pressure element being offset with respect to the cathode pressure element.

4,343,690

NOVEL ELECTROLYSIS CELL

Oronzio de Nora, Milan, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Filed Dec. 11, 1979, Ser. No. 102,629
Claims priority, application Italy, Aug. 3, 1979, 24919 A/79
Int. Cl.³ C25B *9/00*
U.S. Cl. 204—263 47 Claims



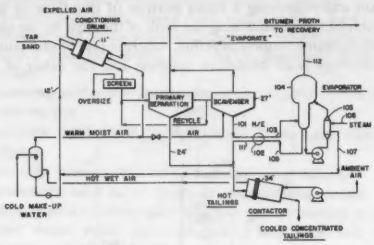
1. An electrolytic cell which comprises a flexible ion permeable diaphragm having at least one compliant electrode layer bonded to or otherwise incorporated on one side thereof, a current distributor bearing against the layer, said distributor having an electroconductive surface adapted to impart polarity to the layer, and a cooperating counter electrode disposed at the other side of the diaphragm, said current distributor or said counter electrode comprising a resiliently compressible mat coextensive with said electrode layer dimensions, said mat being capable of being compressed in the direction of the diaphragm and to exert an elastic reaction force towards the diaphragm at a multiplicity of pressure points and capable to transfer excess resilient force acting on one or more pressure points to other neighbouring pressure points in a lateral direction along a major dimension of the mat whereby compressing pressure can be effectively distributed over the entire surface of the layer, said mat being open to permit flow of electrolyte through it means slideable with respect to the mat to compress the mat toward the diaphragm and a rigid support on the other side of the flexible diaphragm to restrain diaphragm displacement.

4,343,691

HEAT AND WATER RECOVERY FROM AQUEOUS WASTE STREAMS

Ari A. Minkkinen, Versailles, France, assignor to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 92,908, Nov. 9, 1979, abandoned. This application Mar. 5, 1981, Ser. No. 240,722
Int. Cl.³ C10G *1/04*
U.S. Cl. 208—11 LE 8 Claims



1. In a process for the hot water extraction of bitumen from tar sands wherein the tar sands is conditioned with hot water and bitumen is separated from tar sands tailings containing water and sand, the improvement for recovering heat and water values, comprising:

evaporating a portion of the water from a portion of the tar sands tailings, heat requirements for the evaporating being provided by indirect heat transfer with steam;

recovering from the evaporating a water evaporate, a remaining tar sands concentrate and a steam condensate; and

employing steam condensate and water evaporate in the hot water conditioning to provide heat and water make up to the hot water conditioning.

4,343,692

CATALYTIC DEWAXING PROCESS

Bruce H. C. Winquist, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 27, 1981, Ser. No. 248,653
Int. Cl.³ C10G *48/18*
U.S. Cl. 208—111 9 Claims

1. In the process for catalytically hydrodewaxing a petroleum feedstock selected from the group consisting of distillates and residual fractions by contact of said feedstock and hydrogen with a catalyst, the improvement wherein said catalyst is a synthetic ferrierite zeolite having incorporated therewith at least one metal selected from the group consisting of Group VI B, Group VII B and Group VIII metals.

4,343,693

METHOD OF REMOVING CONTAMINANT FROM A FEEDSTOCK STREAM

Eric O. Holland, Borger, Tx. Marvin M. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 80,600, Oct. 1, 1979, Pat. No. 4,269,694. This application Mar. 31, 1981, Ser. No. 249,548
Int. Cl.³ C10G *25/05, 29/04*
U.S. Cl. 208—244 10 Claims

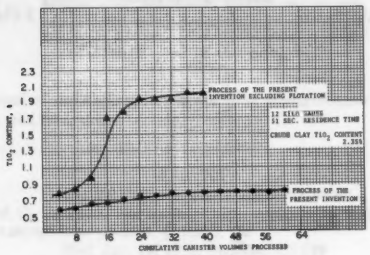
1. A method of removing feedstock stream contaminants including at least one of petroleum sulfonate and silicone oils from a contaminated feedstock stream comprising contacting said contaminated feedstock stream with an adsorbent comprising bauxite, thereby removing at least a portion of said contaminants from said contaminated feedstock stream.

4,343,694

MAGNETIC BENEFICIATION OF CLAYS UTILIZING MAGNETIC SEEDING AND FLOTATION

Jerry A. Cook, Tennille, and Gary L. Cobb, Davisboro, both of Ga., assignors to Anglo-American Clays Corporation, Sandersville, Ga.

Filed Aug. 25, 1980, Ser. No. 180,976
Int. Cl.³ B03B 1/00
U.S. Cl. 209—9 19 Claims


PROCESS OF THE PRESENT INVENTION EXCLUDING FLOTATION
12 KILO GAUSS
11 SEC. RESIDENCE TIME
CRUDE CLAY TiO_2 CONTENT 2.35%
PROCESS OF THE PRESENT INVENTION
TiO_2 CONTENT, %
CUMULATIVE CANISTER VOLUMES PROCESSED

1. A method for separating titaniferous and iron-containing discolorants from a crude kaolin clay, comprising the steps of:

forming a dispersed aqueous slurry of said clay, containing a deflocculant, and a fatty acid collecting agent; and conditioning said slurry to coat said discolorants with said collecting agent, to thereby render same hydrophobic;

adding to said slurry a system of sub-micron sized magnetic ferrite seeding particles, the surfaces of which have been rendered hydrophobic;

mixing said seeded slurry to coalesce said hydrophobic surfaced discolorants with said hydrophobic-surfaced seeding particles;

subjecting said seeded slurry to a froth flotation to remove substantial quantities of said discolorants and seeding particles coalesced therewith, and to remove excess seeding particles and coalesced seeding particles, and to remove excess of the fatty acid collecting agent; and

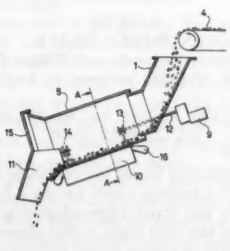
subjecting the flotation-beneficiated clay slurry to a magnetic separation to remove further quantities of the discolorants and seeding particles associated therewith, and to remove seeding particles unassociated with said discolorants.

4,343,695

SYSTEM FOR NON-MAGNETIC METAL SELECTION

Yasuo Watabe, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 964,018, Nov. 27, 1978, abandoned.
This application Nov. 7, 1980, Ser. No. 204,977
Claims priority, application Japan, Nov. 28, 1977, 52-142379
Int. Cl.³ B03C 1/10
U.S. Cl. 209—212 7 Claims



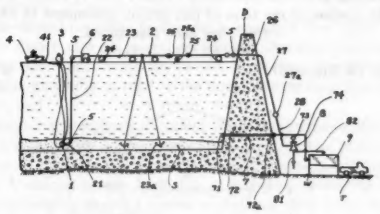
1. Apparatus for selection of non-magnetic metals comprising a hollow drum inclined at an angle and having an elevated upstream end and a downstream end respectively, means contacting the outside of said drum for rotating said drum in a first direction, a shifting electromagnetic field generator disposed to cover the lower part of the periphery of the drum for generating a shifting electromagnetic field in a second direction opposite to said first direction of rotation of said drum, means for supplying a mixture including non-magnetic metal particles to the elevated upstream end of said drum, said drum having an unrestricted internal passage circumferentially and extending throughout its entire length to permit separation of particles along the lower part of the inner periphery of the drum adjacent to said electromagnetic field generator with non-magnetic particles on one side and the remainder of the mixture on the other side, and a movable separation plate mounted at the downstream end of said drum in contact with the inner surface of the drum, said movable separation plate slidable on the inner peripheral surface of the drum for positioning at a boundary between non-magnetic metal particles and the remainder of the mixture to separate non-magnetic metal particles to one side of said plate and the remainder of said mixture separated to the other side of said plate.

4,343,696

SYSTEM FOR REMOVING SLUDGE FROM DAM RESERVOIR

Pai-Yen Hung, No.3-1, Alley 4, Lane 81, Kuang-Chou St., Taipei, Taiwan

Filed Feb. 3, 1981, Ser. No. 231,115
Int. Cl.³ B01D 21/24
U.S. Cl. 210—85 10 Claims



1. An improved system for removing sludge from dam reservoir comprising a suction port, a delivery pipe, a float, a tug boat, several universal joints connected within said delivery pipe, a concentration alarming indicator, a boosting pipe, an ejector and a sludge consolidating means, being characterized in that said boosting pipe may deliver a high pressure stream into nozzles of said ejector to suck the air and water in said delivery pipe connected to the throat of said ejector to start a syphon effect so as to automatically discharge the sludge or sand laden in the fluid through said delivery pipe.

4,343,697

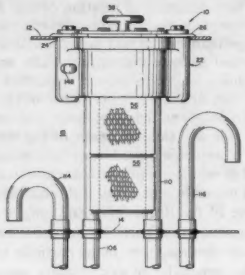
COMBINED HYDRAULIC FLUID RESERVOIR AND RETURN FLUID FILTER SUPPORT STRUCTURE

Wayne R. Miller, and Cyril W. Von Fumetti, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Jun. 21, 1978, Ser. No. 917,479
Int. Cl.³ B01D 27/10
U.S. Cl. 210—90 13 Claims

1. A combined hydraulic fluid reservoir and filter support assembly, comprising: a walled reservoir defining at least a first walled, generally tubular filter insertion-withdrawal passage extending thereinto from a top of the reservoir and having a lower terminal end located at approximately a predetermined full level to which the reservoir is adapted to be filled; an access cover releasably mounted in closing relationship to a top end of the passage; a vertically shiftable plate located in closing relationship to said passage adjacent the terminal lower end thereof; said plate forming part of a filter mounting means fixed to the access cover and holding an upper end of a filter

element assembly in sealed engagement with the plate; said plate cooperating with the passage and access cover to define a return fluid cavity separate from a remaining portion of the



reservoir; a filter inlet port provided in the plate for conveying fluid from the cavity to the filter element assembly and a return fluid conduit connected to the cavity at approximately said full level.

4,343,698

WATER INTAKE

Philip Jackson, Paris, France, assignor to E. Beaudrey & Cie, Societe Anonyme, Paris, France

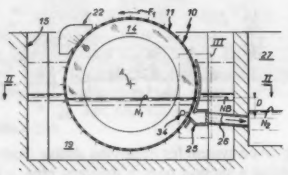
Filed Jan. 23, 1981, Ser. No. 227,670

Claims priority, application France, Feb. 5, 1980, 80 02424

The portion of the term of this patent subsequent to Mar. 11, 1997, has been disclaimed.

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—107 **8 Claims**



1. A water screen for a water intake, said water screen comprising an endless filter element having a surface constructed and arranged for movement generally about an axis and for the general radial flow of water therethrough, means defining a water flow zone with an inlet thereinto in which water being filtered may flow through said filter element surface, said safeguarding means associated with said filter element surface for safeguarding living matter particularly fish in water to be screened, said safeguarding means including a recovery channel having an open end located adjacent said filter element surface remote from said water flow zone inlet and generally facing said filter element surface with said open end being arranged to be immersed during the operation of said water screen, suction means attached to said recovery channel for effecting water flow through said filter element surface into said recovery channel in a direction through said filter element reverse to the intended direction of flow of water to be filtered through said filter element, a shield member extending upwardly from said recovery channel open end adjacent to said filter element surface, said shield member being of a configuration complimentary to the shape and path of movement of said filter element surface and being generally uniformly spaced from said filter element surface, whereby living matter entrained against said filter element surface is directed into said recovery channel open end without being directed up and around said filter element surface, and means for generating an electrical field associated with said recovery channel and inducing said electrical field at right angles to the recovery channel in the water to be tapped.

4,343,699

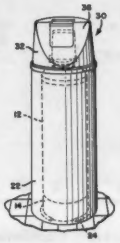
CONVERTIBLE DUAL CONTAINER STORAGE SYSTEM

Stephen H. Davis, Dayton, Ohio, assignor to Water Refining Company, Inc., Middletown, Ohio

Continuation of Ser. No. 21,738, Mar. 19, 1979, abandoned. This application May 19, 1980, Ser. No. 150,865

Int. Cl.³ B01D *29/38*

U.S. Cl. 210—190 **5 Claims**



1. A convertible dual container storage system of the type wherein a fluid stored in one container is periodically required for use in the other container comprising:

a first vertically upstanding, generally cylindrical tank, said first tank having means located near the base thereof to maintain itself in a freestanding, upright position and adapted to be positioned next to or within a second larger tank and easily convertible from one such position to the other;

a second vertically upstanding, generally cylindrical tank having a diameter larger than said first tank and having a circular ridge extending upwardly from the base thereof adapted to partially surround and position said first tank in said second tank, said second tank being capable of storing the fluid which is periodically required for use in said first tank, said first and second tanks being in fluid connection with each other so that liquid may be removed from said second tank and passed into said first tank; and

a hollow, generally cylindrical cover means having a tapered, upstanding wall portion spanned by a flat lid portion, and having an open end of slightly larger diameter than the upper rim portion of said second tank, whereby said open end of said cover means is adapted to sealingly engage said upper rim of said second tank, said upstanding wall portion of said cover means having sufficient height such that when said first tank is disposed within said second tank, said cover means fits over the top of said first tank and sealingly engages said upper rim of said second tank.

4,343,700

CENTRIFUGE FILTER

Edward A. Daubman, Fallbrook, and William G. Owler, Jr., Escondido, both of Calif., assignors to Ametek, Inc., New York, N.Y.

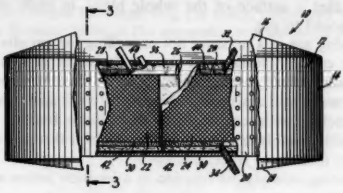
Filed Feb. 23, 1981, Ser. No. 237,286

Int. Cl.³ B01D *33/06*

U.S. Cl. 210—232 **2 Claims**

1. A filtration assembly for use in a centrifuge filter comprising a filter drum, a backing screen having a front and back surface and upper and lower edges adapted to fit about the inner periphery of said filter drum, a filter element attached to and covering said front surface of said backing screen, sealing strips located on said back surface of said backing screen along said upper and lower edges, and complementary releasable mating members located adjacent said sealing members on said

back surface of said backing screen and on said filter drum requiring no adjustment to permit the selective attachment and



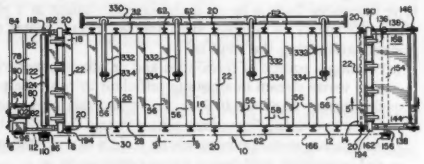
removal of said backing screen and filter media element to and from said filter drum.

4,343,701

HIGH PRESSURE FLAT BED FILTER

David G. Parshall, Northville, Mich., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Apr. 10, 1981, Ser. No. 253,029
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—387 **8 Claims**



1. In a filtering device for receiving a batch of a liquid-particulate mixture to separate said liquid and said particulate into discrete portions, an improvement in said filtering device comprising,

a filter body having a cover positioned over and affixed to a permeable grid panel to define an inner chamber,

door frames carried by said filter body at ends of said inner chamber, each said frame having an inner sealing surface,

doors pivotally carried one each by an upper member of a supporting means attached to said body adjacent to said door frame, each said door having an inflatable gasket with an inner cavity operatively connected to a source of a pressurized incompressible liquid for forcing a sealing strip of said gasket against said door frame sealing surface and forming a seal therewith,

a filter media belt having ends connected to selectively rotatable spools carried by said filter body exterior of said inner chamber ends, said belt extending through said chamber in said body and carried therein by said permeable grid panel, and

inflatable gaskets carried one each on inner sidewalls of said cover, each said gasket extending between said door frames and positioned over a respective edge of said filter media belt, each said gasket having an inner cavity operatively connected to said incompressible liquid source to force a sealing lip of said gasket against said filter media belt and form a seal between said gasket sealing lip, said filter media belt, and said grid panel,

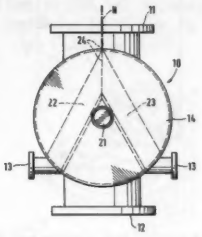
wherein with said doors closed and sealed within said door frame and said elongated gaskets inflated, a batch of said liquid-particulate liquid may be introduced into said filter body inner chamber and subjected to a substantial pressure in said chamber, said pressure causing said liquid portion to flow through said filter media belt and grid panel with said particulate portion being retained by said filter media belt to effect said separation.

4,343,702

APPARATUS FOR CLEANING THE INSIDE FACES OF PIPES OR TUBES

Erich O. Riedel, Haan, Fed. Rep. of Germany, assignor to Riedel-Technik GmbH, Haan, Fed. Rep. of Germany

Filed Nov. 10, 1980, Ser. No. 205,839
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945287
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—391 **3 Claims**



1. An apparatus for cleaning the inside faces of pipes from foreign particles sticking thereto by means of flexible cleaning elements which are oversized relative to the pipe inside diameter to be cleaned, and which are forced through the pipes under hydraulic pressure, comprising:

a drum-shaped rotatable hollow body having a flow inlet, a flow outlet and at least one flexible cleaning element outlet port which body has its axis of rotation disposed in a plane generally normal to the liquid stream direction of flow; and

a V-shaped screen body disposed inside said drum-shaped body arranged at an angle relative to the direction of flow so as to separate the cleaning elements from the liquid, said V-shaped screen body has at least two screen faces joined by an elongated central trough alignable with said outlet port, said V-shaped screen body being rotatably supported by means of a shaft extending generally centrally through said faces which is rotatably supported in said hollow body.

4,343,703

APPARATUS FOR CLEANING THE INTERIOR FACES OF PIPES OR TUBES

Erich O. Riedel, Haan, Fed. Rep. of Germany, assignor to Riedel-Technik GmbH, Haan, Fed. Rep. of Germany

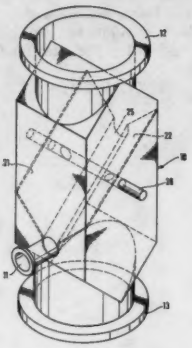
Filed Nov. 10, 1980, Ser. No. 205,543
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1979, 2945286
Int. Cl.³ B01D *29/02*
U.S. Cl. 210—391 **6 Claims**

1. An apparatus for cleaning the inside faces of pipes from foreign particles sticking thereto by means of flexible cleaning elements which are oversized relative to the pipe inside diameter to be cleaned, and which are forced through the pipes under hydraulic pressure, comprising:

an enclosure having a fluid inlet and an opposite fluid outlet and a cleaning element outlet port disposed therebetween; and

an elongated, generally V-shaped screen body having two screen faces disposed inside said enclosure at an acute angle relative to the centerline of the incoming liquid

stream, said screen body also having a longitudinal axis obliquely disposed relative to the throughflow direction



of said liquid stream, and a lower end alignable with said outlet port.

4,343,704

CERAMIC FOAM FILTER

Jerry W. Brockmeyer, Hendersonville, N.C., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 22, 1981, Ser. No. 227,134
Int. Cl.³ B01D *39/20*
U.S. Cl. 210—509 8 Claims

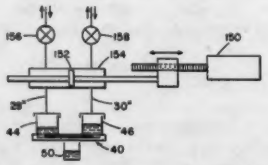
1. A ceramic foam filter for use in filtering molten metal having an open cell structure characterized by a plurality of interconnected voids surrounded by a web of ceramic, said foam consisting essentially of the following composition: 55 to 70% Al_2O_3, 2 to 10% micron-sized reactive alumina, 1 to 5% montmorillonite and 1 to 10% ceramic fibers wherein said micron-sized reactive alumina acts in synergism with said montmorillonite to achieve a homogeneously distributed bonding phase and a suitable slurry rheology whereby the compressive and bending strengths of the ceramic foam filter is substantially increased as compared with alumina-chromia filter elements.

4,343,705

BIOLOGICAL LIQUID FRACTIONATION USING ALTERNATE OPPOSITE FLOW DIRECTIONS ACROSS A MEMBRANE

Kenneth D. Legg, Wellesley, Mass., assignor to Instrumentation Laboratory, Lexington, Mass.

Filed Oct. 31, 1980, Ser. No. 202,478
Int. Cl.³ B01D *13/00, 31/00*
U.S. Cl. 210—637 13 Claims



11. A process for separating blood plasma from other components of whole blood without visible hemolysis comprising the steps of

providing two spaced reservoir chambers that are connected by flow channel structure, said flow channel structure being bounded by filtration membrane structure that has a multiplicity of pores, the pores having a width dimension of less than one micron,

disposing whole blood in said reservoirs and said flow channel so that a surface of the whole blood in each reservoir is exposed to gas,

applying gas at a pressure not exceeding ten psi alternately to the exposed surfaces of the whole blood in said reservoir chambers to produce reciprocating flow of whole blood between said reservoir chambers through said flow channel structure with resulting flow of a plasma fraction free from visible hemolysis from said whole blood through said filtration membrane structure, and

collecting said plasma fraction at a location below said membrane structure.

4,343,706

METHOD OF REMOVING HEAVY METALS FROM INDUSTRIAL WASTE STREAMS

James E. Etzel, and Praveen Anand, both of West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 4, 1980, Ser. No. 174,987
Int. Cl.³ C02F *1/52*
U.S. Cl. 210—667 6 Claims

1. A method of treating an industrial aqueous waste stream containing one or more ionized heavy metal compounds of the type releasable from a ferric hydroxide flocculant at a pH of about 3.2 to 3.7 to remove such ionized heavy metal compounds comprising the steps of:

(a) adding a source of ferric ions and an alkaline material to said waste stream in amounts sufficient to raise the pH of the stream to about 10.2 or above and mixing to form a ferric hydroxide flocculent, whereby said flocculent binds said heavy metal compounds to yield a flocculated material containing said heavy metal compounds,

(b) settling and separating the flocculated material from the stream,

(c) acidifying said flocculated material by addition of an acid in an amount sufficient to lower the pH to about 3.2 to 3.7 and mixing whereby heavy metals bound by said flocculent are released into solution,

(d) removing the heavy metal containing solution from said flocculent,

(e) regenerating said flocculent by addition of an acid in an amount sufficient to lower the pH to about 3 or less and mixing to dissolve the flocculent and

(f) recycling said dissolved flocculent to step (a).

6. The method of claim 1 including the step of passing the removed heavy metals from step (d) through a packed bed of vermiculite particles having a cation-exchange capacity in order to capture said heavy metals on said vermiculite particles.

4,343,707

METHOD AND APPARATUS FOR SEPARATING OUT SOLIDS SUSPENDED IN FLOWING, PURE WATER SYSTEMS

Robert G. Lucas, Stanford, Calif., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Mar. 10, 1980, Ser. No. 129,402
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—695 13 Claims

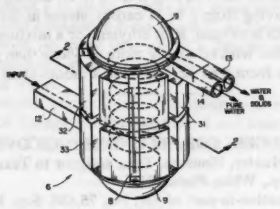
1. Apparatus for separating out strongly magnetic, slightly magnetic and non-magnetic solids suspended in a stream of flowing, substantially pure water, comprising:

(a) a pressure vessel having an inlet for receiving said stream and first and second outlet nozzles;

(b) a conduit within the pressure vessel forming a helical flow path extending between and in fluid communication with said inlet and said outlets between opposing radially inner and outer side walls respectively aligned with said first and second outlet nozzles for directing said stream

from said inlet to said outlets between said side walls, said helical flow path subjecting the solids suspended in the stream of water to a centrifugal force in the direction of said outer side wall;

(c) magnet means for subjecting the solids suspended in the water flowing through the apparatus to a magnetic force; and



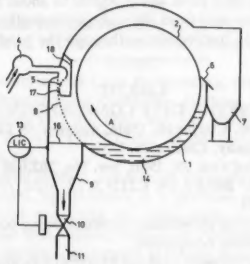
(d) means for mounting said magnet means along the helical flow path so that said magnetic force causes the magnetic particles in said stream to be drawn towards said outer side wall, whereby said centrifugal force and said magnetic force co-act to direct the suspended solids in sufficiently close proximity to said outer side walls so as to pass out of said second outlet nozzle along with some of the water from said stream while the remaining water flows out of the first outlet nozzle.

4,343,708

METHOD AND EQUIPMENT FOR THICKENING OF SUSPENSION OR PULP

Mikko Rantanen, Noormarkku; Alpo Tuomi, and Reino Laiho, both of Pori, all of Finland, assignors to Rauma-Repola Oy, Finland

Filed May 5, 1981, Ser. No. 260,743
Claims priority, application Finland, May 28, 1980, 801735
Int. Cl.³ B01D *33/06*
U.S. Cl. 210—744 **7 Claims**



1. A method for thickening various suspensions or slurries, comprising the steps of passing a sludge or slurry into a basin, rotating a filter unit partly submerged in the sludge or slurry, gathering the thickened sludge or slurry onto the surface of said filter unit from the sludge or the slurry in the basin, passing the sludge or slurry from the basin to above a surface level of the sludge or slurry level, prethickening the sludge or slurry prior to passing the sludge or slurry into a lower portion of the basin by removing a portion of the liquid contained therein through screening means located in an inclined wall of the basin, said inclined wall being located between a feeding-in point of the sludge or slurry and the surface level of the sludge or slurry, and collecting the liquid passing through the screening means in a receiver located below the screening means.

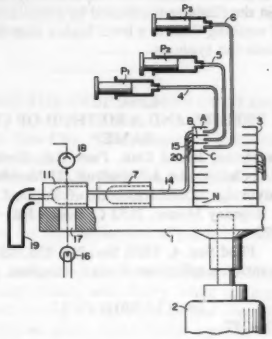
2. A method as claimed in claim 1, further comprising the step of controlling the thickness of the sludge or slurry coming to the filter unit by changing the level of the liquid surface level on the screening means through which the liquid is removed.

4,343,709

METHOD AND DEVICE FOR SEPARATELY COLLECTING AND DISCHARGING COMPONENTS OF LIQUID IN CENTRIFUGAL ROTOR

Akira Okumura, Takarazuka, Japan, assignor to Tetsuo Matsumoto and Eiko Okumura, both of Hyogo, Japan

Filed Dec. 9, 1980, Ser. No. 214,651
Claims priority, application Japan, Dec. 28, 1979, 54-172111
Int. Cl.³ B01D *21/26*
U.S. Cl. 210—782 **3 Claims**



1. A method for separating components of a liquid and separately collecting one said components in a continuously rotating centrifuge device having a rotor, a first container for holding a liquid sample, a second container disposed radially outward of said first container, said containers arranged for rotation with said rotor, each said container having a radially outer end, and a cylindrical liquid receiver mounted at the center of said rotor for rotation therewith, said receiver having a plurality of discrete annular sections, comprising the steps of:

rotating said centrifuge device;

introducing a liquid sample into an annular section of said liquid receiver and from said receiver into said first container;

holding said sample in said first container for a sufficient time to separate said liquid sample into components, including a supernatant, under centrifugal action;

withdrawing a predetermined portion of the supernatant through an overflow pipe having one end opening in said first container at a distance from said outer end, wherein the withdrawing step is effected by introducing additional liquid into an annular section of said liquid receiver, and from said receiver into said first container while said centrifuge device is rotating to cause said predetermined portion to flow out said overflow pipe;

collecting said predetermined portion of the supernatant, withdrawn through said overflow pipe while said centrifuge device is rotating, in the rotating second container for analysis;

introducing another liquid into an annular section of said liquid receiver and from said receiver into the rotating second container for mixing with said predetermined portion, wherein said liquid sample and the said other liquid are introduced into said receiver and thereafter into said first and second containers, respectively, through independent liquid flowstreams, each communicating with a separate source of liquid and having a liquid feeding pipe arranged for delivering fluid to an annular section of said liquid receiver;

optically measuring the mixed liquids while holding said mixed liquids in the rotating second container; and

introducing a washing liquid into at least one annular section of said receiver, and from said receiver into said rotating first and second containers, and withdrawing said washing liquid through a syphon associated with each container to flush said containers, in which each syphon has a first conduit portion communicating with, and extending radially inwardly from, the outer end of the respective container, a second conduit portion extending radially outwardly, and a bend portion connecting the first and second conduit portions, in which the bend portion is disposed radially inwardly of the said one end of the overflow pipe, wherein said predetermined portion is caused to flow out said outlet pipe by introducing said additional liquid to a level below the respective syphon bend, and wherein the flushing is effected by introducing a quantity of said washing fluid to a level higher than each said bend to actuate the syphons.

4,343,710
FILTER PRESSES AND A METHOD OF CLEANING SAME

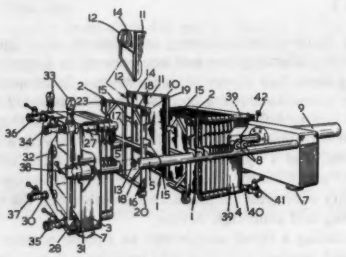
Ronald Shackleton, Broad Oak, Park Rd., Disley, Stockport SK12 2NA; Christopher J. Woodruff, 17 Meadway, Mottram Rise, Stalybridge, Cheshire, both of England, and Ian M. Fletcher, Regency Manor, 2153 C. Bedell Rd., Grand Island, N.Y. 14070

Filed Sep. 4, 1980, Ser. No. 183,799

Claims priority, application United Kingdom, Sep. 4, 1979, 7930555

Int. Cl.³ B01D *25/32*

U.S. Cl. 210—797 **15 Claims**



1. A method of cleaning a plate and frame filter press which has two or more liquid inlet pipes for receiving a liquid to be filtered and a filtrate outlet pipe for discharging filtrate during a filtering operation, the method comprising the steps of obturating the filtrate outlet pipe, isolating one of the inlet pipes from each other inlet pipe to form out of said inlet pipes two separate channels into and out of the press, and flushing out any filtrated out residue contained within the press by feeding a cleaning fluid into the press down one of said channels and recovering the fluid with the residue from the other channel.

4,343,711
SURFACTANT FLUID SUITABLE FOR USE IN WATERFLOOD OIL RECOVERY METHOD

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,908

The portion of the term of this patent subsequent to Mar. 4, 1997, has been disclaimed.

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **14 Claims**

1. An aqueous surfactant-containing fluid suitable for recovering petroleum from a subterranean formation containing water having salinity of from 50,000 to 200,000 parts per million total dissolved solids said fluid comprising water of about the same salinity as the formation water having dissolved therein from 0.1 to 6.0 percent by weight of a sulfonated ethoxylated alkyl or alkylarylthiol having the following formula:

$$R—S—(R'O)_nR''SO_3^-M^+$$

wherein R is an alkyl having from 6 to 26 carbon atoms, or an alkylaryl having from 5 to 24 carbon atoms in the alkyl chain, S is sulfur, O is oxygen, R' is ethylene or a mixture of ethylene and propylene with relatively more ethylene than propylene, n is a number from 1 to 12, and M is a monovalent cation.

4,343,712
PROCESS FOR SECONDARY RECOVERY

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 75,635, Sep. 14, 1979, abandoned, which is a continuation-in-part of Ser. No. 916,985, Jun. 19, 1978, abandoned. This application Feb. 11, 1981, Ser. No. 233,428

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **15 Claims**

1. A process for recovering hydrocarbons from a subterranean hydrocarbon-bearing formation penetrated by an injection well and a production well which comprises:

(A) injecting into the formation via an injection well a drive fluid comprising water having dissolved therein about 0.01 to about 5.0 weight percent of a copolymer of acrylamide and styrene sulfonic acid or the sodium, potassium or ammonium salt thereof alkoxylated with about 2 to about 150 weight percent of a material selected from the group consisting of ethylene oxide and a mixture of ethylene oxide and propylene oxide wherein the weight percent of ethylene oxide in the said mixture is about 60 to about 95, wherein in the said copolymer the weight percent of acrylamide derived units ranges from about 70 to about 95 with the balance being styrene sulfonic acid derived units, and wherein the number average molecular weight of the acrylamide-styrene sulfonic acid copolymers will range from about 50,000 to about 5,000,000.

(B) forcing the said fluid through the formation, and

(C) recovering hydrocarbons through the production well.

4,343,713
PARTICULATE COMPOSITION

Rodney M. Wise, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 29, 1980, Ser. No. 202,038

Int. Cl.³ B01J *1/04*; C11D *3/12, 9/18, 11/00*

U.S. Cl. 252—92 **10 Claims**

1. A free-flowing particulate water-softening composition in an intimate mixture comprising:

(a) from about 10 parts to about 95 parts of an aluminosilicate selected from the group consisting of:

(i) an amorphous compound of the formula

$$Na_x(_xAlO_2.ySiO_2)$$

wherein x has a value of from 1 to 1.2 and y is 1, said amorphous material being further characterized by an Mg^{++} exchange capacity of at least about 50 mg. eq. $CaCO_3/g$;

(ii) a compound of the formula

$$Na_z[(AlO_2)_z.(SiO_2)_j]kH_2O$$

wherein z and j are integers of at least 6; the molar ratio of z to j is in the range of from 1.0 to about 0.5 and k is an integer from about 15 to 264; said aluminosilicate ion exchange material having a particle size diameter from about 0.1 micron to about 100 microns; a calcium ion

exchange capacity of at least about 200 mg eq./g; and a calcium ion exchange rate of at least about 2 grains/gallon/minute gram and mixtures thereof;

(b) from about 0.3 part to about 5 parts of an organic agglomerating compound and soap curd dispersant having a melting point of from about 10° C. to about 100° C.; and

(c) from about ½ part to about 5 parts of a inorganic salt;

(d) from about ½ to about 5 parts of a water soluble soap of a fatty acid containing from about 12 to about 22 carbon atoms with no more than about a quarter of said soap being saturated; and

(e) balance water.

10. A detergent composition comprising from about 5% to about 80% of the agglomerate of claim 1 and from about 20% to about 95% of a spray-dried detergent granule containing a surfactant.

4,343,714

PROCESS FOR TREATING CATHODE MATERIAL

Ashok V. Joshi, Bombay, India, and Nehemiaha Margalit, Chester, N.Y., assignors to Ray-O-Vac Corporation, Madison, Wis.

Filed Dec. 3, 1980, Ser. No. 212,699
Int. Cl.³ H01M *4/08, 4/58*
U.S. Cl. 252—182.1 **10 Claims**

1. A process for treating non-stoichiometric, solid cathode materials adapted to be used in electrochemical cells containing an active metal anode, said treatment effecting said non-stoichiometric, solid cathode materials in a manner to cause them, in said cell, to exhibit their substantially equilibrium open-circuit potential while minimally sacrificing energy density, said process comprising exposing said cathode materials to a solution of a compound of an active metal to reduce active impurities in said cathode material and a small amount of said cathode material on the solid surface and thereafter removing said solution, the active metal in said compound being in a state wherein it is capable of forming a compound with Y derived from the material M_aY_b.

4,343,715

IMMOBILIZED HEMOGLOBIN, AND PROCESSES FOR EXTRACTING OXYGEN FROM FLUIDS USING THE SAME

Joseph Bonaventura, and Celia Bonaventura, both of Beaufort, N.C., assignors to Duke University, Durham, N.C.

Filed Oct. 10, 1980, Ser. No. 196,036
Int. Cl.³ C01B *13/00;* A61M *16/00*
U.S. Cl. 252—186 **9 Claims**

1. An oxygen carrier, capable of reversibly binding and releasing oxygen, immobilized in a polymer matrix selected from the group consisting of compounds having urethane linkage, acrylic gels, maleic anhydride containing polymers, epoxy type polymers, glutaronic aldehyde type polymers and mixtures thereof.

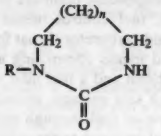
4,343,716

1-SECONDARY OR 1-TERTIARY ALKYL OR CYCLOALKYL-HEXAHYDRO-2-PYRIMIDINONES AND 1-SECONDARY OR 1-TERTIARY ALKYL OR 1-CYCLOALKYL-2-IMIDAZOLIDINONES AND THEIR USE AS ANTIFOAMING AGENTS

Michael T. Melchior, Scotch Plains; George E. Milliman, Fanwood, and Guido Sartori, Linden, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 930,222, Aug. 2, 1978, Pat. No. 4,183,903. This application Jun. 25, 1979, Ser. No. 51,873
Int. Cl.³ C09K *3/00*
U.S. Cl. 252—192 **10 Claims**

1. An acid gas scrubbing composition having a reduced tendency to foam comprising an alkaline material comprising an alkali metal salt or an alkali metal hydroxide and an amino compound, and an antifoaming agent of the following general formula:



wherein R is a secondary or tertiary alkyl or cycloalkyl or alkyl-substituted cycloalkyl radical having from 4 to 20 carbon atoms and n is 0–2, said antifoaming agent being present in an amount ranging from about 1 to about 1000 ppm by weight of said composition.

4,343,717

PROCESS FOR THE PREPARATION OF STABLE SILICA SOL

Brent M. Lok, New City, N.Y., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Feb. 8, 1980, Ser. No. 119,649
Int. Cl.³ B01J *13/00*
U.S. Cl. 252—313 S **12 Claims**

1. A process for the preparation of stable colloidal silica sol which comprises the steps of:

(a) forming an aqueous slurry of calcium silicate,

(b) vigorously mixing said slurry while adding thereto, a dilute acid having a pK_a value of less than about 8, said acid having an anion which forms a precipitate with the calcium ion,

(c) heating said slurry at a temperature up to about 100° C., and for a period of time until precipitation is complete,

(d) filtering said slurry and contacting the filtrate obtained therefrom with at least one ion exchange resin,

(e) recovering therefrom a silica sol, and

(f) stabilizing and concentrating said sol.

4,343,718

AQUEOUS FOAMING AGENT SOLUTION

James H. Williams, Louisville, Ky., assignor to Borden, Inc., Columbus, Ohio

Division of Ser. No. 63,823, Aug. 6, 1979, which is a continuation of Ser. No. 7,482, Jan. 29, 1979, abandoned. This application Apr. 17, 1980, Ser. No. 141,018
Int. Cl.³ B01F *17/12*
U.S. Cl. 252—352 **4 Claims**

1. An aqueous foaming agent solution for making foam which is characterized by very low shrinkage comprising, in parts by weight, the following components in the indicated relative amounts:

15–30 parts of a surfactant selected from salts of mono- and disubstituted diphenyl oxide sulfonates, said substituents being selected from C_6 to C_{16} linear and branched carbon chains and the salts being selected from alkali metal and alkaline earth metal salts, and mixtures thereof,

10–25 parts of 85% phosphoric acid, and

15–25 parts of urea.

4,343,719

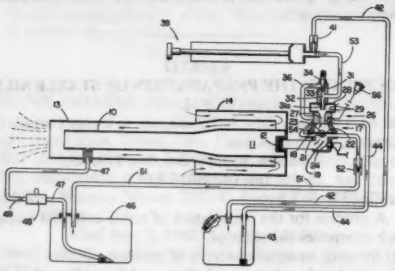
PULSE FOG GENERATOR

Robert E. Stevens; John H. Stowe, and Jeremiah M. Emerich, all of Westfield, Ind., assignors to Curtis Dyna-Products, Westfield, Ind.

Filed Dec. 31, 1980, Ser. No. 221,892
Int. Cl.³ B01F *3/02, 3/04;* B01J *13/00*
U.S. Cl. 252—359 CG **2 Claims**

1. A pulse fog generator including a combustion device of the resonant intermittant combustion type having a fuel-air inlet valve in which passage of air and fuel to a combustion

antechamber is controlled by a conventional petal-type check valve, a carburetor supplying a fuel air mixture to the inlet valve, said carburetor having a throat through which intake air flows at a velocity dependent upon the combustion rate in the combustion device, fuel control means for presenting fuel under pressure at said carburetor throat for aspiration into said intake air flow, said means comprising an aspirating passage opening into said throat and a fuel inlet valve controlling the flow of fuel through said passage, pressure responsive means for varying the flow of fuel through said fuel inlet valve in directly proportional response to the velocity of said intake air flow through the carburetor throat, said pressure responsive means comprising means forming a chamber with said fuel inlet valve providing an inlet for fuel to said chamber and said



aspirating passage providing a fuel outlet from said chamber, and a diaphragm forming one wall of said chamber operatively connected to said fuel inlet valve to control the flow of fuel into said chamber in response to the pressure therein, and starting means for altering the response of said pressure responsive means during a start-up interval to thereby present fuel at the junction of said aspirating passage and said throat independently of the air flow therethrough, said starting means comprising means forming a further chamber on the side of said diaphragm opposite said first mentioned chamber, and air supply means for supplying air under pressure for a brief starting interval to said further chamber to thereby temporarily move said diaphragm to open said fuel inlet valve independently of the fuel pressure in said first mentioned chamber.

4,343,720

QUATERNARY ALKYNOXYMETHYL AMINES

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 556,330, Mar. 7, 1975, abandoned. This application Nov. 24, 1978, Ser. No. 963,606

Int. Cl.³ C09K *3/00*

U.S. Cl. 252—390 **16 Claims**

1. A process of inhibiting corrosion which comprises treating a system with a quaternary alkynoxymethyl amine halide having one to two quaternary nitrogen atoms to each of which are attached up to two alkynoxymethyl moieties, the groups directly attached to the quaternary nitrogen atoms in the said quaternary amines being said alkynoxymethyl groups and being R and R′ groups when there is but one quaternary nitrogen atom present per molecule and being said alkynoxymethyl groups and being R and Z groups when there are two quaternary nitrogen atoms present per molecule, the Z groups constituting bridging groups linking the two quaternary nitrogen atoms, the R groups being monovalent hydrocarbon, hydroxy substituted alkyl, or furfuryl groups, the R′ groups being monovalent hydrocarbon, and Z groups being divalent alkylene, alkenylene, alkynylene, alkaralkylene, or alkyleneether groups, and said alkynoxymethyl groups having the formula $HC{\equiv}CR''OCH_2$—, where R″ is alkylidene.

4,343,721

OLEFIN POLYMERIZATION CATALYST COMPONENTS AND POLYMERIZATION PROCESS

Brian L. Goodall, and Jacob C. van der Sar, both of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 18, 1980, Ser. No. 207,848

Claims priority, application United Kingdom, Nov. 20, 1979, 7940131

Int. Cl.³ C08F *4/64*

U.S. Cl. 252—429 B **20 Claims**

1. A process for the preparation of an olefin polymerization catalyst component which comprises contacting a solid composition obtained by combining a magnesium halide, an electron donor and a tetravalent titanium halide, this composition being substantially free from aluminum compounds, with a liquid medium comprising a halide of B, Al, Ga, In, Tl, Sn or Sb, these elements being present in their highest valency state or a halide of tetravalent Te, and removing from the catalyst component substantially all metal halide originating from the liquid medium.

4,343,722

PROCESS FOR PRODUCING CATALYST

Masao Saito, Niigata; Yuuzi Onda, Kawasaki, and Yuko Murayama, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 31, 1981, Ser. No. 249,506

Claims priority, application Japan, Apr. 3, 1980, 55-44427

Int. Cl.³ B01J *31/12, 31/02*

U.S. Cl. 252—431 N **8 Claims**

1. A process for producing a catalyst for hydrogenation of nitriles, which comprises heating dicobalt octacarbonyl together with an aromatic nitrile at a temperature of 100°–200° C. in the absence of oxygen gas.

4,343,723

CATALYTIC COMPOSITE FROM PARTIALLY CRYSTALLIZED CLAY

Edward S. Rogers, Glen Ellyn, Ill., and Hosheng Tu, Lake Forest, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 130,306, Mar. 14, 1980, abandoned. This application May 26, 1981, Ser. No. 267,238

Int. Cl.³ B01J *29/06, 21/16*

U.S. Cl. 252—455 Z **18 Claims**

1. A catalytic composite comprising a crystalline aluminosilicate zeolite and an inorganic oxide comprising silica and alumina, said zeolite comprising between about 10% and about 90% by weight of said composite, said composite having pores with diameters within the range of between 25 and 250 angstroms, more than half the volume of said pores having a diameters greater than about 70 angstroms.

10. The catalytic composite of claim 1 manufactured by a method comprising:

(a) contacting an inorganic oxide containing alumina and silica with an acid;

(b) preparing a reaction mixture by mixing the contacted inorganic oxide from step (a) with water and an alkali metal hydroxide; and,

(c) reacting said reaction mixture for a period sufficient to produce from about 10% to about 90% by weight of the crystalline zeolite which may be produced theoretically from said reaction mixture.

4,343,724

HYDROCARBON DEHYDROGENATION WITH AN ATTENUATED SUPERACTIVE MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 80,639, Oct. 1, 1979, Pat. No. 4,256,608, which is a continuation-in-part of Ser. No. 18,811, Mar. 7, 1979, Pat. No. 4,210,524, which is a continuation-in-part of Ser. No. 833,332, Sep. 14, 1977, Pat. No. 4,165,276. This application Nov. 24, 1980, Ser. No. 209,552

The portion of the term of this patent subsequent to Mar. 17, 1998, has been disclaimed.

Int. Cl.³ B01J *23/64*

U.S. Cl. 252—466 B 13 Claims

1. A nonacidic catalytic composite comprising a combination of a catalytically effective amount of a pyrolyzed rhenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of an alkali or alkaline earth component, an iron component and a platinum group component which is maintained in the elemental metallic state.

4,343,725

CLEANSERS FOR WINDOWS, MIRRORS AND REFLECTING SURFACES CONTAINING A HIGH MOLECULAR WEIGHT POLYOXYETHYLENE GLYCOL POLYMER

Eva Kiewert, Düsseldorf; Karlheinz Disch, Haan, and Jürgen Wegner, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 30, 1979, Ser. No. 71,120

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840464

Int. Cl.³ C11D *1/58, 1/72*

U.S. Cl. 252—542 10 Claims

1. Aqueous-based cleansers for windows, mirrors and reflecting surfaces, free of builder salts and organic solvents consisting essentially of:

from 0.01% to 0.5% by weight of a water-soluble, nonionic polyoxyethylene glycol polymer having a molecular weight of between 300,000 and 4,000,000,

from 0.1% to 5% by weight of at least one water-soluble, synthetic surface-active compound selected from the group consisting of synthetic anionic surface-active compounds, nonionic surface-active compounds, cationic surface-active compounds, and compatible mixtures thereof,

from 0 to 5% by weight of water-soluble, alkaline-reacting compounds selected from the group consisting of alkali metal and ammonium hydroxides, alkali metal and ammonium carbonates, alkali metal and ammonium bicarbonates, monoalkylamines having 1 to 4 carbon atoms, dialkylamines having 1 to 4 carbon atoms in each alkyl, trialkylamines having 1 to 4 carbon atoms in each alkyl, mono-, di- and tri-alkylolamines having 2 to 4 carbon atoms in each alkylol, cycloalkylamines and morpholine,

from 0 to 1% by weight of customary auxiliary agents selected from the group consisting of odorants, colorants and preservatives,

and the remainder to 100% by weight of demineralized water.

4,343,726

LOW IRRITATING HIGH VISCOSITY DETERGENT COMPOSITION

Richard R. Egan, Worthington, and Phillip L. Cotrell, Urbana, both of Ohio, assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Continuation-in-part of Ser. No. 36,706, May 7, 1979, Pat. No. 4,247,425, which is a continuation of Ser. No. 742,075, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 848,978, Nov. 7, 1977, abandoned, and a continuation-in-part of Ser. No. 49,835, Jun. 18, 1979, Pat. No. 4,256,611, which is a continuation of Ser. No. 942,074, Sep. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 795,342, May 9, 1977, abandoned. This application Feb. 7, 1980, Ser. No. 119,260

The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.

Int. Cl.³ C11D *1/12, 1/83*

U.S. Cl. 252—547 56 Claims

1. A detergent composition having low eye and skin irritation properties and capable of forming a high viscosity composition in water when the solids content is at least about 10% by weight comprising:

(a) adduct of ethylene oxide or mixtures of ethylene oxide and propylene oxide and a partial glycerol ester of a carboxylic fatty acid; wherein at least about 50% of said fatty acids have at least 16 carbon atoms, and wherein said adduct is from at least about 50 moles of ethylene oxide per mole of said glycerol ester; and provided that said adduct is from at least about 70 moles of ethylene oxide per mole of said glycerol ester when a mixture of ethylene oxide and propylene oxide containing less than about 85 mole percent of ethylene oxide based on the total of ethylene oxide and propylene oxide is employed; and

(b) anionic surface active agent, wherein the weight ratio of (a) to (b) is about 1:1 to about 4:1, respectively, and wherein said anionic surface-active agent is selected from the group of salts of higher alkyl sulfates, salts of higher alkyl ether sulfates, salts of higher alkyl benzene sulfonates, salts of higher alkyl sulfonates, and mixtures thereof.

4,343,727

POLYVINYL CHLORIDE SHOE SOLE MOLDING COMPOSITION CONTAINING CELLULOSIC FIBROUS FLOCK

Arnold Cohen, Cohasset, Mass., assignor to Reichhold Chemicals Incorporated, White Plains, N.Y.

Filed Oct. 24, 1979, Ser. No. 87,712

Int. Cl.³ C08L *1/02, 1/08*

U.S. Cl. 524—41 13 Claims

1. A polyvinyl chloride shoe sole injection molding composition for use in producing a flexible molded shoe sole having as a primary feature a dull non-glossy surface appearance, consisting of a polyvinyl chloride homopolymer resin containing from about 5 to about 30 parts of a natural organic cellulosic fibrous flock homogeneously dispersed therein having an average length of from about 30 to about 300 microns, and from about 75 to about 100 parts of plasticizer and from about 0.5 to about 1.5 parts of a stabilizer, all based upon 100 parts of polyvinyl chloride homopolymer resin.

4,343,728

PROCESS FOR PREPARING SOLUTION POLYMERIZATES OF ACRYLIC AND METHACRYLIC ESTERS AND THEIR USE AS FLOW-PROMOTING AGENTS IN LACQUERS

Helmut Eschwey, Michelstadt-Odenwald; Bernd Wegemund, Haan, and Wolfgang Gress, Wuppertal-Elberfeld, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 30, 1980, Ser. No. 192,555

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940042

Int. Cl.³ C08K *5/05, 5/10*

U.S. Cl. 523—456 **12 Claims**

1. A process for improving the flow properties of a lacquer selected from the group consisting of two-component polyurethane or epoxy lacquers, lacquers based upon alkyd resins, and lacquers based upon polyvinyl chloride which comprises adding to said lacquer a flow improving amount of a solution polymerizate prepared by polymerizing acrylate or methacrylate monomers in a batch comprising said monomers and a solvent comprising a high-boiling alcohol of from 8 to 40 carbon atoms and from 1 to 6 hydroxyl group, said batch containing from about 15 to 85 percent by weight of said monomers, based upon the weight of the total batch.

4,343,729

ORGANIC PIGMENTS

William W. Maslanka, London-Britain Township, Chester County, Pa., and Gavin G. Spence, New Castle County, Del., assignors to Hercules Incorporated, Wilmington, Del.

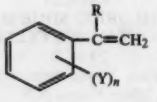
Division of Ser. No. 106,607, Dec. 26, 1979, Pat. No. 4,281,082, which is a division of Ser. No. 909,606, May 25, 1978, Pat. No. 4,235,982, which is a continuation-in-part of Ser. No. 803,330, Jun. 3, 1977, abandoned. This application Jan. 21, 1981, Ser. No. 227,005

Int. Cl.³ C08L *33/24*

U.S. Cl. 524—529 **12 Claims**

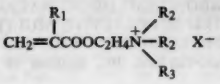
7. A process for preparing a latex of graft copolymer particles which comprises graft copolymerizing in aqueous media and in the presence of a free-radical initiator (1) at least one ethylenically unsaturated monomer (a) and at least one polyethylenically unsaturated monomer (b) in an amount at least sufficient to provide cross-linked graft copolymer particles, and (2) a water-soluble cationic prepolymer having an RSV of about 0.1 to about 2.5 (1 M NaCl, 1%, 25° C.),

said monomer (a) being selected from the group consisting of methyl alpha-chloroacrylate, ethyl alphachloroacrylate, methyl methacrylate, isopropyl methacrylate, phenyl methacrylate, vinyl chloride, acrylonitrile, methacrylonitrile, and monomers having the formula



wherein R is hydrogen or methyl, Y is methyl or chlorine, and n is 0, 1, 2, or 3, said monomer (b) being selected from the group consisting of divinylbenzene; diallyl phthalate; ethylene glycol dimethacrylate; 1,3-butylene glycol dimethacrylate; 1,6-hexanediol dimethacrylate; polyethylene glycol dimethacrylate; polypropylene glycol dimethacrylate; trivinylbenzene; divinylnaphthalene; diallyl maleate; diallyl fumarate; trimethylol propane trimethacrylate; and pentaerythritol tetraacrylate, and said prepolymer (2) being the addition polymerization product of

(i) about 5 mole percent to 100 mole percent of a cationic monomer having the formula

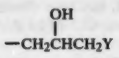


wherein

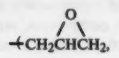
R_1 is hydrogen or methyl,

R_2 is hydrogen, or a C_1–C_4 alkyl,

R_3 is hydrogen, a C_1–C_4 alkyl,



where Y is hydroxyl or halogen,



or $-(-CH_2CH_2O)_nH$ where n is an integer 1 or more and X^- is an anion, and

(ii) from about 95 mole percent to 0 mole percent of at least one monoethylenically unsaturated amide monomer,

the amount of prepolymer (2) employed in preparing the graft copolymer particles being from about 1 part to about 25 parts by weight for each 100 parts by weight of monomers (1) employed.

4,343,730

WATER-IN-OIL EMULSIONS OF POLYMERS OF QUATERNARY AMMONIUM COMPOUNDS OF THE ACRYLAMIDO TYPE

Harold L. Becker, and Rudolf S. Buriks, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Mar. 9, 1981, Ser. No. 241,967

Int. Cl.³ C08K *5/01*

U.S. Cl. 524—551 **25 Claims**

1. A stable emulsion of an aqueous internal phase in a non-aqueous external phase, said aqueous internal phase containing a homo- or a copolymer of an acrylamido alkylene quaternary ammonium salt.

4,343,731

EPOXY RESIN COMPOSITION AND PROCESS FOR PRODUCTION

Donald G. Pucci, Lafayette, and Ralph T. Everly, Coshocton, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,004

Int. Cl.³ C08K *5/05*

U.S. Cl. 523—427 **9 Claims**

1. An epoxy resin composition comprising the fusion product of:

(a) a diglycidyl ether of bisphenol A and

(b) a diglycidyl ether of bisphenol A containing a fusion catalyst with

(c) tetrabromobisphenol A, said glycidyl ethers (a) and (b) being in a weight ratio of from 2:1 to 2.5:1, respectively, said fusion product having an average molecular weight of between 500 and 700.

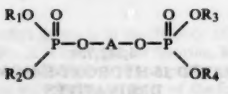
4,343,732

STABILIZED HALOGEN-CONTAINING RESIN COMPOSITIONS

Takashi Zama, Kawasaki; Koji Takeuchi, Yokohama; Masuo Yukutomi, Ayase, and Fumiyuki Ito, Kawaguchi, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Oct. 15, 1980, Ser. No. 197,157
Claims priority, application Japan, Oct. 24, 1979, 54/137246
Int. Cl.³ C08K 5/52
U.S. Cl. 524—114 3 Claims

1. A stabilized composition, comprising:
a halogen-containing resin;
an organic phosphate ester having the formula:



wherein R_1, R_2, R_3, and R_4 independently represent a phenyl, C_1 to C_{10} alkyl-substituted phenyl, cyclohexyl, phenoxyethyl, or phenylethyl radical and A is the hydrocarbon residue of bisphenol A; and
a calcium-zinc or barium-zinc salt of a C_6 to C_{22} fatty acid, wherein said organic phosphate ester is present in an amount of from 0.01 to 10 parts by weight per 100 parts by weight of said halogen-containing resin.

4,343,733

STABILIZED POLYMER COMPOSITIONS

Melvin F. Maringer, Cincinnati, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to National Distillers & Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 38,957, May 14, 1979, abandoned. This application Dec. 1, 1980, Ser. No. 211,487
Int. Cl.³ C08K 3/20, 3/26, 5/18, 5/34
U.S. Cl. 524—87 11 Claims

1. A synergistic mixture for protecting polymers against heat degradation which comprises, by weight,
(a) about 5 to 25% of a N,N'-disubstituted-p-arylene diamine;
(b) about 15 to 60% of a 1,2-dihydro-2,2,4-trialkyl quinoline and polymers thereof; and
(c) about 25 to 75% of magnesium oxide, hydroxide or carbonate.

4. A polymer composition with improved protection against heat degradation containing a stabilizing amount of the synergistic mixture of claim 1 and wherein the polymer is selected from the group consisting of polyolefins, vinyls, olefinvinyl copolymers, polyamides, cellulosics and polyesters.

4,343,734

PROTEIN DIAGNOSTIC FOR ATHEROSCLEROSIS

Jane B. Lian, N. Weymouth; Robert J. Levy, Newton, and Paul M. Gallop, Chestnut Hill, all of Mass., assignors to The Children's Hospital Medical Center, Boston, Mass.

Filed Jan. 10, 1980, Ser. No. 111,115
Int. Cl.³ A61K 35/14, 37/02, 49/02; C07G 7/00
U.S. Cl. 260—112 B 16 Claims

1. A process of purifying a protein diagnostic for atherosclerosis, said protein having an amino residue composition as set forth in Table I, being derived from primate atherosclerotic tissue, having a molecular weight of about 80,000 as determined by SDS disc-gel electrophoresis at 14° C. with 15% acrylamide vertical slab gels, and having an isoelectric point between 4.16 and 4.30 as determined by isoelectric focusing at 2° C. on a horizontal slab isoelectric focusing apparatus using 4% acrylamide gels and an ampholyte mixture, at pH 4–6, while maintaining constant power at 8.0 watts for three hours, said process comprising the steps of
obtaining primate atherosclerotic tissue, and
separating out of said tissue a Gla-containing protein having a molecular weight of about 80,000.

14. A purified protein diagnostic for atherosclerosis, said protein having an amino residue composition as set forth in Table I, being derived from primate atherosclerotic tissue, having a molecular weight of about 80,000 as determined by SDS disc-gel electrophoresis at 14° C. with 15% acrylamide vertical slab gels, and having an isoelectric point between 4.16 and 4.30 as determined by isoelectric focusing at 2° C. on a horizontal slab isoelectric focusing apparatus using 4% acrylamide gels and an ampholyte mixture, at pH 4–6, while maintaining constant power at 8.0 watts for three hours.

4,343,735

PROCESS FOR THE PURIFICATION OF INTERFERON

Ulrich Menge; Michael Morr, both of Brunswick; Maria-Regina Kula, and Kristin Anastassiadis, both of Wolfenbüttel, all of Fed. Rep. of Germany, assignors to Gesellschaft fur Biotechnologische Forschung mbH (GBF), Braunschweig-Stockheim, Fed. Rep. of Germany

Filed Oct. 23, 1980, Ser. No. 200,015
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1979, 2943016
Int. Cl.³ C07C 103/52; A61K 45/02
U.S. Cl. 260—112 R 16 Claims

1. A process for the purification of interferon consisting essentially of (1) partitioning interferon in an aqueous multiphase system in the presence of at least one ion exchanger which is soluble in said system selected from the group consisting of (a) polyoxyalkylene glycols and (b) reaction products of polyhydric alcohols with alkylene oxides, which ion exchanger contains at least one carbon-bound group —S_{0-1}—Z, wherein —S—Z is a member selected from the group consisting of:
—NH—$(CH_2)_{1-14}$—Z,
—O—$(CH_2)_{1-14}$—Z,
—NH—CO—$(CH_2)_{1-14}$—Z,
—NH—$(CH_2)_{1-14}$—NH—CO—$(CH_2)_{1-3}$—Z,
—NH—CH_2—CH_2—(O—CH_2—CH_2)$_{1-4}$—Z and
—O—CO—$(CH_2)_{1-13}$—Z and
—Z is a member selected from the group consisting of:
—P(O)$(OH)_2$,
—O—P(O)$(OH)_2$,
—O—P(S)$(OH)_2$,
—S—P(O)$(OH)_2$ and
their salt forms, (2) separating the phases including an interferon containing phase and (3) recovering purified interferon from said interferon containing phase.

4,343,736

PROCESS FOR RECOVERING INTERFERON

Yahiro Uemura, Hirakata; Hirofumi Arimura, Toyonaka; Hiroshi Morise, Hirakata; Satoshi Funakoshi, Katano, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Division of Ser. No. 175,744, Aug. 6, 1980, Pat. No. 4,314,935. This application Jul. 6, 1981, Ser. No. 280,687
Claims priority, application Japan, Oct. 5, 1979, 54-128513
Int. Cl.³ A61K 45/02; C07G 7/00
U.S. Cl. 260—112 R 7 Claims

1. A process for recovering interferon, which comprises contacting a solution containing interferon produced by the induced cells of human origin with a water-insolubilized heparin to allow the interferon to be adsorbed on the water-insolubilized heparin and then eluting the interferon with an aqueous solution containing an inorganic salt and chondroithin sulfate.

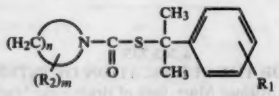
4,343,737

PROCESS FOR PRODUCTION OF THIOLCARBAMATES AND THE THIOLCARBAMATES OBTAINED BY SAID PROCESS

Kazuhiko Konno; Atsushi Goh, and Kunio Uchimura, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Japan

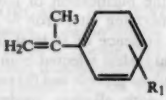
Filed Mar. 25, 1981, Ser. No. 247,502
Claims priority, application Japan, Mar. 31, 1980, 55/40307
Int. Cl.³ C07D *211/60, 207/24, 209/32;* C07C *155/02*
U.S. Cl. 260—239 BF 16 Claims

1. A process for producing a thiolcarbamate compound of the following formula



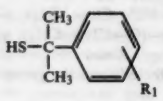
(IV)

wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom or a nitro group, R_2 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, m is 1 or 2, and n is an integer of 4 to 6, which comprises reacting an α-methylstyrene of the following formula



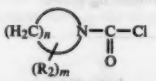
(I)

wherein R_1 is as defined above,
or its dimer with hydrogen sulfide in the presence of P_2S_5 or P_4S_7 as a catalyst to form a mercaptan of the following formula



(II)

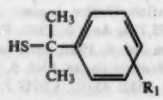
wherein R_1 is as defined above,
and reacting the mercaptan of formula (II) with a carbamoyl chloride of the following formula



(III)

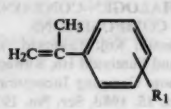
wherein R_2, m and n are as defined.

16. A process for producing a mercaptan of the formula



(II)

wherein R_1 represents a hydrogen atom, an alkyl group having 1 to 5 carbon atoms, an alkoxy group having 1 to 5 carbon atoms, a halogen atom or a nitro group, R_2 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, m is 1 or 2, and n is an integer of 4 to 6, which comprises reacting an α-methylstyrene of the following formula



(I)

wherein R_1 is as defined above,
or its dimer with hydrogen sulfide in the presence of P_2S_5 or P_4S_7 as a catalyst.

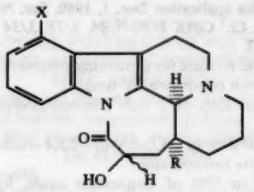
4,343,738

HALOGENATED 15-HYDROXY-E-HOMOEBURANE DERIVATIVES

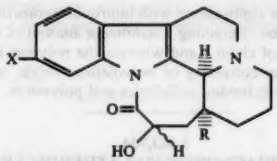
Csaba Szantay; Lajos Szabo; György Kalaus; Lajos Dancsi; Tibor Keve, and Ferenc Drexler, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 175,385, Aug. 5, 1980, Pat. No. 4,285,865, and a continuation-in-part of Ser. No. 168,560, Jul. 14, 1980, Pat. No. 4,314,939. This application Dec. 16, 1980, Ser. No. 216,903
Claims priority, application Hungary, Aug. 6, 1979, RI-721
The portion of the term of this patent subsequent to Aug. 25, 1998, has been disclaimed.
Int. Cl.³ C07D *471/22*
U.S. Cl. 260—239.3 P 5 Claims

1. A halogenated 15-hydroxy-E-homoeburnane of the formulae (Ia) or (Ib),



(Ia)



(Ib)

wherein R is a C_{1-6} alkyl group and X is halogen, or an acid addition salt or optically active isomer thereof.

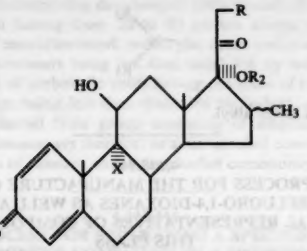
4,343,739

PROCESS OF SELECTIVE SOLVOLYSIS

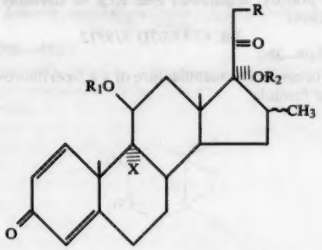
Ivan Villax, Lisbon, and Philip R. Page, Parede, both of Portugal, assignors to Plurichemie Anstalt, Vaduz, Liechtenstein

Filed May 27, 1981, Ser. No. 267,553
Claims priority, application Portugal, May 27, 1980, 71309
Int. Cl.³ C07J *5/00*
U.S. Cl. 260—397.45 9 Claims

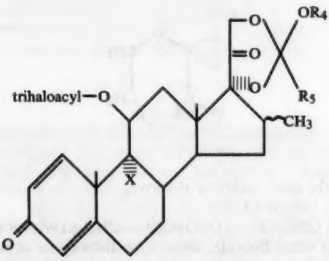
1. A process for the solvolysis at 11 of an 11β-trihaloacyl-16-methylcorticosteroid to form an ester of the formula



wherein the methyl group is in the 16α- or 16β-position, R is hydrogen or OR_3, X is hydrogen or fluorine, R_2 is acyl and R_3 is a hydrogen or an aliphatic acyl group of 2 to 5 carbon atoms which comprises solvolysing an ester of the formula



or a cyclic ortho-ester thereof of the formula



wherein R_1 is hydrogen or a trihaloacyl group, R_4 is alkyl of 1 to 3 carbon atoms and R_5 is alkyl of 1 to 16 carbon atoms, aralkyl of 7 or 8 carbon atoms or phenyl with a catalytic quantity of sodium methoxide in an anhydrous medium.

4,343,740

HYDROXYLALKYL HYDROXY-AROMATIC CONDENSATION PRODUCTS AS FUEL AND LUBRICANT ADDITIVES

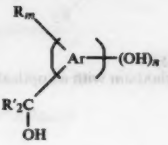
Charles P. Bryant, Euclid, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 123,613, Feb. 22, 1980, Pat. No. 4,285,824, which is a continuation-in-part of Ser. No. 5,623, Jan. 22, 1979, Pat. No. 4,205,960, which is a division of Ser. No. 901,173, Apr. 28, 1978, Pat. No. 4,163,730, which is a division of Ser. No. 678,101, Apr. 19, 1976, Pat. No. 4,108,784, which is a continuation-in-part of Ser. No. 459,750, Apr. 9, 1974, abandoned. This application Jul. 1, 1981, Ser. No. 279,399

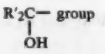
Int. Cl.³ C07D *207/00*

U.S. Cl. 260—326.5 FM **13 Claims**

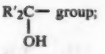
1. An additional concentrate comprising about 20 to 90 percent of a condensation product made by the process comprising reacting (A) at least one alpha hydroxyalkyl hydroxy-aromatic compound of the general formula



wherein Ar is a hydrocarbyl aromatic nucleus of 6 to about 30 carbon atoms, said aromatic nucleus substituted with 1 to 3 lower alkoxy, lower alkylthio, chloro, or nitro substituents, each R is a nonfused hydrocarbyl group of about 25 to about 700 carbon atoms, each R′ is independently a hydrogen atom, an alkyl group of 1 to 36 carbon atoms, or a halogen-substituted alkyl group of 1 to about 36 carbon atoms, n is 1 to 3 and m is 1 to 5 with the provisos that (i) the total number of carbon atoms in the R′ groups does not exceed 36 and (ii) where m exceeds 1, one of the R groups can also be a



with (B) at least one hydrocarbyl, alpha-beta olefinically unsaturated compound selected from the group consisting of C_{2-40} nitriles, and ammonium and metal salts of C_{2-40} carboxylic acids, the reaction of (A) with (B) resulting in the formation of a carbon-to-carbon bond, said bond including the carbon of at least one



and an inert solvent/diluent.

4,343,741

CHIRAL PHOSPHINES

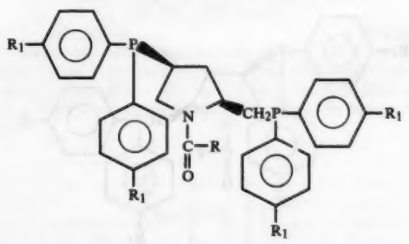
John M. Townsend, Morris, Conn., and Donald Valentine, Jr., Santa Clara, Calif., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 22, 1981, Ser. No. 256,378

Int. Cl.³ C07D *207/10, 307/32*

U.S. Cl. 548—412 **15 Claims**

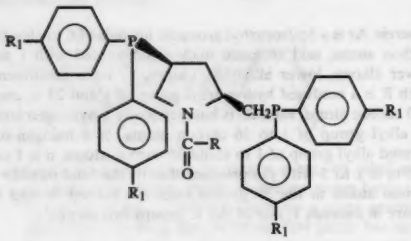
1. A compound of the formula:



wherein R is tertiarybutoxy, and R_1 is lower alkyl, lower alkoxy or

and R_3 is lower alkyl.

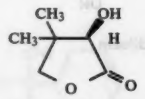
5. A complex of rhodium with an optically active phosphine of the formula:



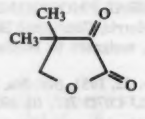
wherein R is tertiarybutoxy and R_1 is lower alkyl, lower alkoxy or

and R_3 is lower alkyl.

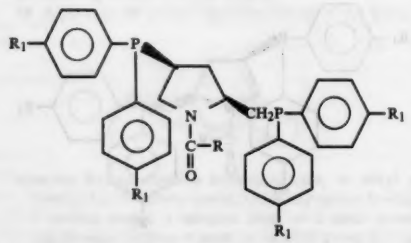
9. A process of enantioselectively producing a compound of the formula:



comprising hydrogenating in an organic solvent medium a compound of the formula:



in the presence of a catalyst wherein said catalyst is a rhodium complex of a phosphine of the formula:



wherein R is tertiarybutoxy and R_1 is lower alkyl, lower alkoxy or

and R_3 is lower alkyl.

4,343,742

PROCESS FOR THE MANUFACTURE OF 2,3-PERFLUORO-1,4-DIOXANES AS WELL AS SOME SPECIAL REPRESENTATIVES OF COMPOUNDS OF THIS CLASS

Herbert Muffler, Frankfurt am Main; Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Butzbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main

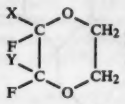
Continuation-in-part of Ser. No. 167,404, Jul. 11, 1980, abandoned. This application Jan. 14, 1981, Ser. No. 225,150

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928602

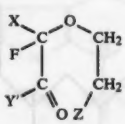
Int. Cl.³ C07D *319/12*

U.S. Cl. 549—380 **6 Claims**

1. A process for the manufacture of a 2,3-perfluoro-1,4-dioxane of the formula



wherein each of X and Y independently of the other is F or CF_3, which comprises reacting a carbonyl compound of the formula



wherein

X has the same meaning as above,

Y' is F, CF_3 or Cl, and

Z is Cl, OSO_2CH_3 or $OSO_2C_6H_4$—CH_3(-p) with at least one alkali metal fluoride, ammonium fluoride or combination thereof in an amount of at least about 1 mol of fluoride or combination of fluorides/mol of carbonyl compound if Y' is F or CF_3 or of at least about 2 mols of fluoride or combination of fluorides/mol of carbonyl compound if Y' is Cl, at a temperature of from about 20 to about 200° C. and normal or elevated pressure in an aprotic polar solvent for a time of from about 5 to 35 hours.

4,343,743

NOVEL POLYESTERAMIDES HAVING LOW GLASS TRANSITION TEMPERATURES

Jean Coquard, Grezieu la Varenne, and Jean Goletto, Ecully, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Dec. 5, 1980, Ser. No. 213,472

Claims priority, application France, Dec. 10, 1979, 79 30650

Int. Cl.³ C09J *3/16*

U.S. Cl. 260—404.5 **19 Claims**

1. A random or regularly recurring block polyesteramide having a glass transition temperature of −30° C. or less, which comprises the polymerization product of (i) essentially difunctional monomers comprising at least one carboxylic acid func-

tion, or ester/amide-forming derivative thereof, at least 1 mol % of which comprising dicarboxylic acids or such derivatives thereof and having from 20 to 60 carbon atoms, with the amount of monofunctional carboxylic acids comprising said carboxyl monomers being less than about 1% by weight and the amount of carboxylic acids having in excess of two functional groups being less than about 5% by weight, and (ii) a member selected from group consisting of dihydroxyl and diamino comonomers therefor, or aminoalcohol comonomers, or mixtures of diamino and aminoalcohol comonomers.

4,343,744

PROCESS FOR SEPARATING A SPECIFIED COMPONENT CONTAINED IN A MIXTURE OF MULTIPLE FATTY COMPONENTS FROM THE MIXTURE THEREOF

Jun Kawai, Hachioji; Hidekazu Bessyo, Yokohama, and Hidehiko Hibino, Tokyo, all of Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,742
Claims priority, application Japan, Jan. 7, 1980, 55-29
Int. Cl.³ C11B *7/00*
U.S. Cl. 260—412.1 **10 Claims**

1. A process for fractionating a starting mixture of crystallizable fatty components, which comprises the steps of:

(a) cooling the entirety of said starting mixture, free of solvent, with an ultra-low temperature refrigerant to solidify the entirety of said starting mixture and produce a brittle, solid, granular product;

(b) raising the temperature of said granular product to a first temperature which corresponds to or is slightly higher than the freezing point of the component of said starting mixture having the lowest freezing point, thereby melting a first fraction containing, as its main component, said component of said starting mixture that has the lowest freezing point, while retaining the remainder of said granular product as a first solid phase; and

(c) then separating said molten, first fraction from said first solid phase and recovering said first fraction.

4,343,745

PROCESS FOR SOLUBILIZING ORGANIC OR MINERAL SALTS IN ORGANIC SOLVENTS

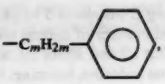
Gerard Soula, Meyzieu, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Feb. 29, 1980, Ser. No. 125,775
Claims priority, application France, Mar. 2, 1979, 79 05438
Int. Cl.³ C07F *5/06*; C07C *85/16, 87/20*
U.S. Cl. 260—429 J **49 Claims**

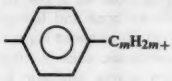
1. A process for solubilizing an organic or mineral salt in an organic solvent in which the organic or mineral salt is initially not soluble, or for increasing the solubility of an organic or mineral salt in an organic solvent, said process comprising contacting said organic or mineral salt of the formula A^-M^+, wherein A^- is a mineral or organic anion and M^+ is a cation selected from the group consisting of the cation NH_4^+ and its derivatives, and the cations derived from the metals of the groups I_A, II_A, III_A, IV_A, V_A, VI_A, VII_A, VIII, I_B, II_B, III_B, IV_B and V_B of the periodic table, with at least one sequestering agent, said sequestering agent being soluble in said organic solvent and having the formula:

$$N[CHR_1—CHR_2—O—(CHR_3—CHR_4—O)_n—R_5]_3 \quad (I)$$

wherein n is an integer from 0 to 10 inclusive; R_1, R_2, R_3 and R_4, which can be the same or different, are each a hydrogen atom or an alkyl radical having 1 to 4 carbon atoms; R_5 is a radical selected from the group consisting of an alkyl radical having 1 to 12 carbon atoms, a cycloalkyl radical having 3 to 12 carbon atoms, a phenyl radical, a radical of the formula



and a radical of the formula



and m is an integer from 1 to 12 inclusive; said sequestering agent of formula (I) and said organic or mineral salt forming a complex of the formula:

$$[N—[CHR_1—CHR_2—O—(CHR_3—CHR_4—O)_n—R_5]_3]_y(M^+A^-) \quad (II)$$

wherein y is greater than or equal to 1 and less than or equal to 3, and R_1, R_2, R_3, R_4, R_5, n, M^+ and A^- are defined as above, said complex of formula (II) being soluble in said organic solvent.

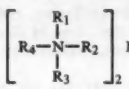
4,343,746

QUATERNARY AMMONIUM THIOMOLYBDATES

James R. Anglin, Gibsonia; Yumi P. Ryu, Murrysville, and Gary M. Singerman, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 10, 1980, Ser. No. 214,972
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R **11 Claims**

1. The quaternary ammonium thiomolybdate having the formula



wherein R_1 is alkyl or alkenyl having from one to about 30 carbon atoms; R_2 and R_3 are independently selected from alkyl and alkenyl having from about 8 to about 30 carbon atoms; R_4 is alkyl or alkenyl having from one to about 20 carbon atoms and the total number of carbon atoms in R_1, R_2, R_3 and R_4 is between about 25 and about 80.

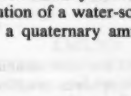
4,343,747

PREPARATION OF QUATERNARY AMMONIUM THIOMOLYBDATES

Yumi P. Ryu, Murrysville; Gary M. Singerman, Monroeville, and James R. Anglin, Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 5, 1980, Ser. No. 213,676
Int. Cl.³ C07F *11/00*
U.S. Cl. 260—429 R **10 Claims**

1. The method of making quaternary ammonium thiomolybdates in a two-phase reaction system which comprises contacting an aqueous solution of a water-soluble thiomolybdate salt with a solution of a quaternary ammonium salt having the formula



where R_1, R_2 and R_3 are independently selected from alkyl or alkenyl having from one to about 30 carbon atoms; R_4 is se-

lected from alkyl or alkenyl having from about 5 to about 30 carbon atoms, and benzyl; the total number of carbon atoms in R_1, R_2, R_3 and R_4 is between about 20 and about 80; n is the valence of X; and X is selected from chlorine, bromine, iodine, sulfate, hydrogen sulfate and lower alkyl sulfate; in a water-immiscible organic solvent selected from aliphatic hydrocarbons having from about five to about 20 carbon atoms, halogenated aliphatic hydrocarbons having from about one to about two carbon atoms, aromatic hydrocarbons and halogenated aromatic hydrocarbons having from six to about eight carbon atoms, alkyl esters of aliphatic carboxylic acids having from about four to about seven carbon atoms, aliphatic ketones having from about five to about ten carbon atoms, alkyl ethers having from about four to about eight carbon atoms, and mixtures thereof; wherein the solubility of said quaternary ammonium salt in said organic solvent is at least about five times its solubility in water; and recovering the quaternary ammonium thiomolybdate produced thereby in the said organic solvent and the by-product salt in the aqueous solution.

4,343,758
Patent Not Issued For This Number

4,343,749
PROCESS FOR THE PREPARATION OF MONOHYDROPERFLUOROALKANE-SULFONIC ACID HALIDES AND SOME SPECIFIC REPRESENTATIVES OF THIS CLASS OF COMPOUND

Günter Siegemund, Hofheim am Taunus, and Werner Schwertfeger, Butzbach, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 10, 1981, Ser. No. 300,918
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1980, 3034537
Int. Cl.³ C07C *143/70*
U.S. Cl. 260—543 F **5 Claims**

1. A process for the preparation of a monohydroperfluoroalkanesulfonic acid halide of the formula I

$$R_f-\underset{\underset{H}{|}}{CF}-(CF_2)_n-SO_2X \qquad (I)$$

in which R_f denotes F or perfluoroalkyl with 1–10, preferably 1–8 and in particular 1–3, C atoms, X denotes Cl or F and n denotes a number from 1 to 7, which comprises

(a) reacting a monohydroperfluoroalkanesulfonic acid of the formula II

$$R_f-\underset{\underset{H}{|}}{CF}-(CF_2)_n-SO_3H \qquad (II)$$

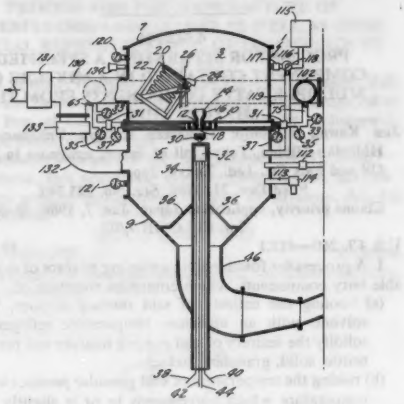
in which R_f and n have the same meaning as in formula I, with pyrocatechol-phosphorus trichloride to give the monohydroperfluoroalkanesulfonic acid chloride of the formula I in which X=Cl, and

(b) if desired, then reacting this compound further with at least one alkali metal fluoride and/or an alkali metal hydrogen fluoride, preferably in an aprotic, polar solvent, to give the monohydroperfluoroalkanesulfonic acid fluoride of the formula I in which X=F.

4,343,750
METHOD FOR PRODUCING METAL POWDER

Paul R. Holiday, Palm Beach Gardens, and Robert J. Patterson, II, Lake Park, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 853,077, Nov. 21, 1977, abandoned, which is a continuation of Ser. No. 654,247, Jan. 30, 1976, abandoned. This application Apr. 25, 1979, Ser. No. 33,272
Int. Cl.³ B01J *2/04*
U.S. Cl. 264—8 **10 Claims**



1. A method of producing metal particulate including the steps of:

(1) forming a continuous annular flow of gaseous cooling fluid, said annular flow of gaseous cooling fluid being made up of a plurality of annular adjacent flow sections of gaseous cooling fluid at different annular locations with each having a mass flow;

(2) melting metal to form a supply of molten metal;

(3) projecting the molten metal outwardly from within said annular flow of said gaseous cooling fluid as liquid droplets into said annular flow of gaseous cooling fluid solidifying said liquid droplets into metal particles, each projected liquid droplet and resulting metal particle having a cooling rate as it passes through each annular adjacent flow section of gaseous cooling fluid;

(4) individually controlling the mass flow of each of a plurality of said individual annular adjacent flow sections of gaseous cooling fluid so that the annular flow has a plurality of its individual annular flow sections each with a selected mass flow to control the cooling rate of each projected liquid droplet and resulting solidified metal particle at different annular locations as it passes through the annular flow of gaseous cooling fluid; and

(5) collecting said solidified metal particles.

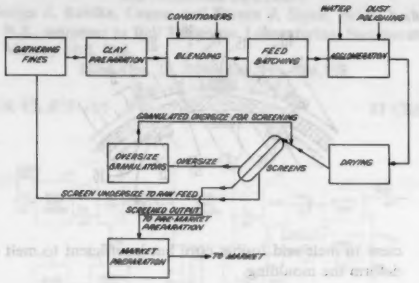
4,343,751
CLAY AGGLOMERATION PROCESS

Naresh Kumar, Cassopolis, Mich., assignor to Lowe's, Inc., South Bend, Ind.

Filed Sep. 15, 1980, Ser. No. 186,836
Int. Cl.³ B01J *2/12*
U.S. Cl. 264—37 **28 Claims**

1. An agglomeration process for producing clay pellets from clay fines material, comprising the steps of preparing the clay fines material for agglomeration, mixing said prepared clay fines material and water to form a wet aggregate of discrete particles, subjecting said aggregate to a rolling action for a time sufficient to form soft pellets therefrom of a predetermined size and of a general spherical shape, subjecting said pellets to an elevated temperature for a period of time suffi-

cient to remove most of the water added in forming said aggregate, thereby to form a mass of substantially dry, firm and



frangible pellets, and screening said mass of pellets to separate the pellets of predetermined size from other size pellets present in said mass.

4,343,752

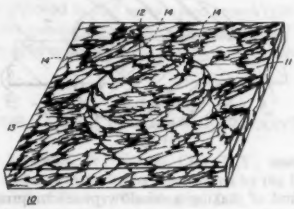
SYNTHETIC ONYX AND METHOD

Irving Cann, c/o Roman Marble, Inc., 15 Rusfield St., Boston, Mass. 02119

Continuation of Ser. No. 965,078, Nov. 30, 1978, abandoned. This application Aug. 22, 1980, Ser. No. 180,461

Int. Cl.³ B29C *9/00*

U.S. Cl. 264—71 **5 Claims**



1. The method of preparing decorative material, comprising:

(A) preparing a matrix of a mixture of filler particles, polymerizable resin and polymerization catalyst, tending to polymerize said resin,;

(B) depressing coloring material into said matrix;

(C) placing separate portions of said colored matrix in mounds on the surface of a mold, said mounds being separated from each other;

(D) vibrating said mounds to cause them to flow together, said matrix portions extending over said mold surface; and

(E) allowing said extended matrix to harden to produce said decorative material with colored markings formed in veins within said matrix in a wavy, smoothly flowing, variegated pattern contrasting with said matrix.

4,343,753

METHOD FOR FINISHING A TUBULAR FELTED SLEEVE

Michael A. Winson, Bury, England, assignor to Webron Products Limited, Rossendale, England

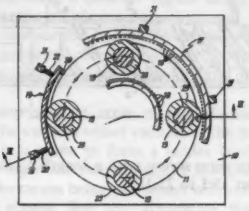
Continuation-in-part of Ser. No. 20,700, Mar. 15, 1979, abandoned. This application Oct. 20, 1980, Ser. No. 198,314

Claims priority, application United Kingdom, Dec. 24, 1977, 53910/77

Int. Cl.³ D04H *5/00*

U.S. Cl. 264—119 **4 Claims**

1. A method of finishing a needle-felted tubular sleeve having exposed outer fibres, comprising placing the sleeve over a cylindrical support mounted for rotation relative to a base, rotating the support and sleeve while moving the base to cause the sleeve to pass a heat source and have its outside surface



uniformly heated by the heat source to cause partial melting of the outer fibres of its outside surface, allowing the sleeve to cool, and removing it from the support.

4,343,754

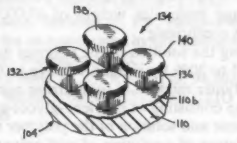
PROCESS AND APPARATUS FOR MOLDING LINERS IN CONTAINER CLOSURES

Sheldon L. Wilde; Thomas J. McCandless, both of Crawfordsville, and Robert M. Saunders, Ladoga, all of Ind., assignors to H-C Industries, Inc., Crawfordsville, Ind.

Filed Sep. 21, 1979, Ser. No. 77,584

Int. Cl.³ B29D *9/08, 7/16*

U.S. Cl. 264—154 **56 Claims**



1. A process of making a composite closure for a container, comprising the steps of:

forming a plastic cap having a top wall portion with a depending annular skirt and a plurality of plastic liner-engaging pedestals integrally extending from said top wall portion in the direction of said skirt, each of said plastic liner-engaging pedestals being spaced from each other to define liner-receiving passageways therebetween, said plastic liner-engaging pedestals including a series of pedestals extending generally across said top wall portion of said cap;

depositing molten liner-forming plastic into said liner-receiving passageways of said plastic cap;

compression molding said liner-forming plastic against said plastic liner-engaging pedestals and said top wall portion of said cap so that said liner-forming plastic flows upon and engages said pedestals and said top wall portion of said cap to form a plastic liner in said plastic cap.

4,343,755

PROCESS FOR EXTRUDING ETHYLENE POLYMERS

John C. Miller, Piscataway, and Archibald L. Burnett, Warren, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

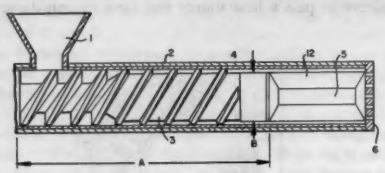
Continuation-in-part of Ser. No. 940,005, Sep. 6, 1978, abandoned. This application Aug. 8, 1979, Ser. No. 64,399

Int. Cl.³ B28B *3/20*

U.S. Cl. 264—176 R **16 Claims**

1. A process comprising forming an extrudate from a rapidly

melting ethylene polymer which experiences slow shear thinning by melt extruding said polymer through an extruder



having an extrusion screw with a length to diameter ratio of between about 15:1 to 21:1.

4,343,756

PROCESS FOR THE PRODUCTION OF CAST FILMS FROM POLYARYL SULPHONE/POLYCARBONATE MIXTURES

Hans-Leo Weber, Rommerskirchen; Eckart Reese, Dormagen; Hans Kaloff, Dormagen, and Hans-Josef Fausten, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 17, 1980, Ser. No. 207,583

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948673

Int. Cl.³ B29D *7/02*

U.S. Cl. 264—216 **2 Claims**

1. In the process for the production of cast films from mixtures of 90 to 60% by weight of a linear polyaryl sulphone having weight-average molecular weight of 15,000 to 55,000 and 10 to 40% by weight of a linear polycarbonate having a weight average molecular weight of 65,000 to 120,000, the improvement comprising

(i) stabilizing the solution of the polymer mixture by adding thereto 5 to 30% by weight, relative to the weight of the solid polymer mixture, a solubilizing agent selected from the group consisting of ethylene-glycol-monomethylether and toluene said solution of the polymer mixture comprising a mixture of a solution of said polyaryl sulphone in a solvent selected from the group consisting of methylene chloride, ethylene chloride, trichloroethane and chloroform and a solution of said polycarbonate in a solvent selected from the group consisting of methylene chloride, ethylene chloride, trichlorethane, chloroform, m-cresol and pyridine; and

(ii) stretching the dried cast film at a stretching ratio between 1:2 and 1:5 at a temperature above the glass transition temperature of said polyaryl sulphone/polycarbonate mixture.

4,343,757

METHOD OF MAKING GAME RACKET FRAME

Frank W. Popplewell, Saffron Walden, England, assignor to Dunlop Limited, London, England

Filed Aug. 12, 1980, Ser. No. 177,401

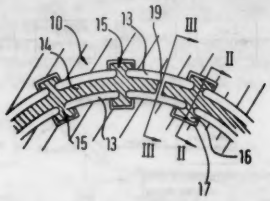
Claims priority, application United Kingdom, Aug. 24, 1979, 7929590

Int. Cl.³ B29C *1/14;* **B29D** *23/02, 12/00*

U.S. Cl. 264—221 **11 Claims**

1. A method of making a frame for a games racket, the frame comprising a head and a shaft, in which at least said head is formed by the method comprising:

positioning a fusible core inside a suitable mould whereby a space is defined between said core and the internal walls of the mould, said space corresponding to said head, injecting into said space thermoplastics material reinforced by short discrete lengths of fiber material randomly dispersed therein, said core having a melting point below the injection temperature, shaping said core to have a plurality of locating lugs which abut against said internal walls of the mould and hold said core in the desired position against the injection pressures, allowing the moulding to set and then raising the temperature to an amount sufficient to melt said fusible core but insufficient to melt or deform the moulding.



4,343,758

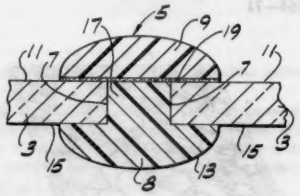
CUT GLASS WINDOW PANE

Charles D. Goralnik, 200 Brynwyck Pl., St. Louis County, Mo. 63141

Continuation-in-part of Ser. No. 54,169, Jul. 2, 1979, Pat. No. 4,217,326. This application Feb. 20, 1980, Ser. No. 123,018 The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ B29C *9/00;* **B44F** *1/06*

U.S. Cl. 264—254 **12 Claims**



1. A method of making a window pane comprising a cut glass panel including a plurality of glass pieces and cames of synthetic resin arranged in a predetermined pattern between adjacent edges of the glass pieces and having flanges on both sides of the window pane; said method comprising:

providing a mold of an elastomeric material which is nonreactive with the synthetic resin, the mold having grooving in its upper surface in the pattern of the cames,

introducing moldable synthetic resin into the grooving in the mold to fill the grooving, the grooving being of a cross sectional shape corresponding to the cross sectional shape of the flanges;

allowing the synthetic resin to set in the mold to form the flanges for one side of the window pane;

removing said flanges from the mold;

thereafter positioning the glass pieces on the same mold with the edges of each glass piece spaced from the edges of the adjacent glass pieces in the predetermined pattern, the spaces between adjacent glass pieces being in register with the grooving;

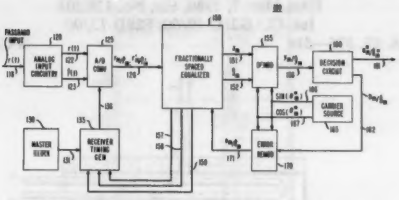
introducing sufficient moldable synthetic resin between the edges of the glass pieces to fill the grooving and to fill the spaces between the adjacent glass pieces; and

allowing the synthetic resin to set in the grooving to form the flanges for the other side of the window pane, and to set in the spaces between the glass pieces to form the webs of the cames, the flanges for said one side of the window pane being bonded in place on said one side of the window pane in register with the flanges on the other side of the window pane.

4,343,759
EQUALIZER SECTION

George J. Kustka, Ocean, and Steven J. Sipek, Brick, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 10, 1980, Ser. No. 196,158
Int. Cl.³ H04L *25/03*
U.S. Cl. 375—14 11 Claims



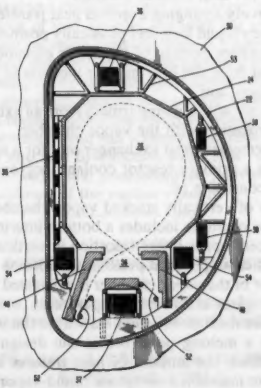
1. Data receiver circuitry of the type which generates an equalized signal in response jointly to an input signal and the values of an ordered plurality of coefficients, said circuitry generating at least a first control signal which is a function of the location in said ordered plurality of an individual one of said coefficients which meets a predetermined criterion, said circuitry including a plurality of sections (**220**, **240**, **260**, **280**) each of which stores respective ones of said coefficients,

characterized in that each section includes means (**600**, **680**) for making a determination as to whether said one coefficient is stored in that section and means (**500** or **620**, **640**, **661**) for generating said control signal if said one coefficient is determined to be stored in that section.

4,343,760
DIVERTOR TARGET FOR MAGNETIC CONTAINMENT DEVICE

Theodore E. Luzzi, Jr., Garden City, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 14, 1979, Ser. No. 93,952
Int. Cl.³ G21B *1/00*
U.S. Cl. 376—134 6 Claims



1. In a magnetic field containing device of the type including a toroidal-shaped vacuum vessel adapted to contain a plasma, first electromagnetic coil means distributed in proximity to said vessel for shaping the plasma within said vessel, and second electromagnetic coil means for diverting a scrape-off flux from an outer region of said plasma to a divertor region for removal by a vacuum producing means of impurities within the plasma; the improvement comprising:

toroidal vacuum vessel means having contained therein a vacuum including a divertor region and a magnetically diverted scrape-off plasma flux;

input and output parallel headers having fluid coolant means forming modules circumferentially coupled together within the vacuum vessel vacuum of the divertor region and:

a target, comprising an array of spaced-apart, swirl tube means in the vacuum vessel vacuum of the divertor region arranged in a plane to form a ladder configuration between the input and output parallel headers;

said swirl tube means being positioned within the path of the scrapeoff plasma flux and transverse thereto so that plasma flux impinges on the outside of the spaced-apart swirl tube means at an acute angle of incidence θ such that only one side of each swirl tube is exposed to plasma flux;

the plane of the spaced-apart swirl tube means being oriented at an acute angle θ with respect to the flux path so that plasma flux impinges directly on said spaced-apart swirl tube means in the vacuum vessel vacuum of the diverter region;

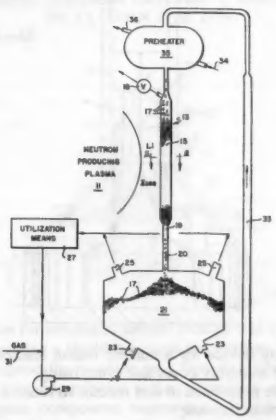
said headers for circulating a fluid coolant through the vacuum vessel vacuum of the divertor region and through said spaced-apart swirl tube means from the inlet header to the outlet header;

the respective ends of the swirl tubes being formed to the input and output parallel headers.

4,343,761
HEAT TRANSPORT SYSTEM

Samuel D. Harkness, McMurray, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1979, Ser. No. 94,993
Int. Cl.³ G21B *1/00*; G21C *15/00*; G21G *1/06*
U.S. Cl. 376—148 9 Claims



1. A heat transport and tritium breeding system in combination with a neutron-producing plasma comprising:

a vertical duct having an inlet disposed above its outlet for passing a flow of ceramic particles through a central region exposed to neutron radiation from said plasma to directly heat said particles, said vertical duct comprises outer walls of metal provided with passageways for liquid flow and inner walls of ceramic, heat insulative material selected from alumina, magnesia, silica and combinations thereof, said inner and outer walls being spaced apart over a portion of their length to provide a heat insulative gap therebetween;

lithium-containing material disposed outside both the inner and outer walls of said vertical duct between its central region and said neutron-producing plasma for breeding and recovering tritium gas resulting from the reaction of lithium and neutrons;

globular ceramic particles of about 0.5 to 1.5 cm diameter selected from the group consisting of magnesia, alumina, silica and combinations thereof forming a falling bed within the inner walls of said duct, said bed being substantially free of material other than magnesia, alumina and silica;

preheater means connected to the inlet of said vertical duct for receiving said ceramic particles at a first temperature and preheating said particles to a second temperature greater than said first temperature;

a heat exchanger vessel connected to the outlet of said vertical duct and having means for passing a flow of coolant fluid into direct heat exchange contact with said ceramic particles;

utilization means communicating with said flow of coolant fluid outside said heat exchanger vessel for using heat removed from said heat exchanger vessel and including means for circulating said coolant fluid therethrough; and

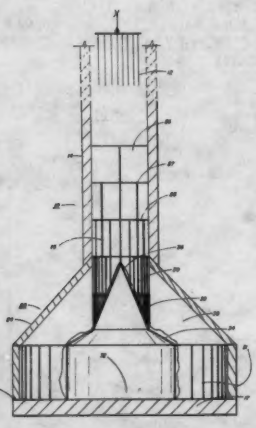
conveyor means connected to the lower portion of said heat exchanger vessel for upwardly transporting said ceramic particles to above the inlet of said vertical duct and permitting said particles to flow by gravity through said duct into said heat exchanger vessel.

4,343,762

SAFETY DEVICE FOR NUCLEAR FISSION REACTORS

Morris L. Brownlee, 4728 Jefferson Hwy., Jefferson, La. 70121

Filed Jun. 27, 1980, Ser. No. 163,593
Int. Cl.[3] G21C 9/00
U.S. Cl. 376—280 5 Claims



1. A safety device for a nuclear fission reactor having suspended fuel assembly cores and comprising:

(a) a bottle positioned in said reactor to receive a fuel assembly core in its neck;

(b) a plurality of bottle neck baffle sets mounted in vertical, congruent succession in said bottle neck, each set having a multiple of the number of baffles of the set immediately above it for progressively and unblockably dividing the critical mass of the fuel assembly core into less than critical masses as they pass through said sets; and

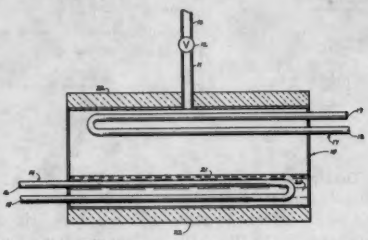
(c) a plurality of bottle body baffle sets mounted in said bottle body and in alignment with said bottle neck baffle sets, the upper body baffle set being congruent to the lower of said bottle neck baffle sets, and being engaged with around a center cone for dispersing said divided mass of the fuel assembly core outwardly and downwardly into a gas expansion space and thence into an annular lower body baffle set supported on the base of said bottle.

4,343,763

HEAT TRANSFER SYSTEM

Joseph C. McGuire, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 7, 1980, Ser. No. 128,203
Int. Cl.[3] G21C 19/00; F28D 15/00
U.S. Cl. 376—314 3 Claims



1. A method for operating a nuclear reactor having a primary reactor coolant loop and a secondary liquid loop comprising:

(a) providing a sealed vapor chamber including a bottom interior portion and an adjacent upper interior portion in vertical communication and close physical proximity with one another;

(b) exhausting all noncondensible gases at ambient temperature from the interior of the vapor chamber;

(c) placing heat transfer medium within the vapor chamber having a melting point below the design heat tranfer temperature in an amount sufficient to maintain a two phase liquid-vapor-liquid system within the vapor chamber at the design heat transfer temperature;

(d) operatively arranging a first heat transfer means in the primary reactor coolant loop and physically positioned within the bottom interior portion of the vapor chamber for transferring heat from the primary reactor coolant loop to the heat transfer medium;

(e) operatively arranging a second heat transfer means in the secondary liquid loop and physically positioned within the upper interior portion of the vapor chamber for transferring heat from the heat transfer medium to the secondary liquid loop; and

(f) selectively withdrawing tritium from an extension in open communication with the vapor chamber.

2. An intermediate heat exchanger unit for a nuclear reactor that includes a primary reactor coolant loop and a secondary liquid loop consisting of:

a plurality of vertically stacked vapor chambers, wherein;

each vapor chamber includes a bottom interior portion and an adjacent upper interior portion in vertical communication and close physical proximity with one another;

the interior of the vapor chamber is exhausted of all noncondensible gases at ambient temperature;

heat transfer medium is contained within the vapor chamber and has a melting point below the design heat transfer temperature, the amount of heat transfer medium being such as to maintain a two phase liquid-vapor-liquid system within the vapor chamber at the design heat transfer temperature; and

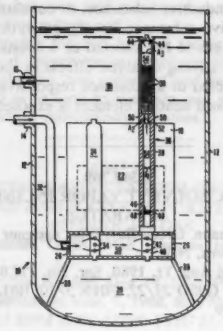
first heat transfer means is operatively arranged in a primary reactor coolant loop and physically positioned within the bottom interior portion of the vapor chamber for transferring heat from the primary reactor coolant loop to the heat transfer medium.

4,343,764

NUCLEAR REACTOR CONTROL COLUMN

Dennis M. Bachovchin, Plum Borough, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 28, 1980, Ser. No. 144,748
Int. Cl.³ G21C 7/16
U.S. Cl. 376—338 5 Claims



1. In a nuclear reactor having a reactor core and a control column, said control column comprising:

a generaly cylindrical housing capable of being disposed within a nuclear reactor core and having a plurality of openings in the top thereof;

an inlet nozzle attached to the lower end of said housing and having a plurality of holes therein for conducting a reactor coolant therethrough;

a plurality of neutron absorbing balls disposed in said housing and capable of being supported by the flow of reactor coolant;

a first plate having orifices therein and disposed within said housing near the lower end thereof;

a second plate having a channel therethrough and disposed within said housing above said first plate thereby defining a first section between said first plate and said second plate and a second section between said second plate and the top of said housing, said second section having a cross-sectional area larger than said first section with said first section having a cross-sectional area larger than the cross-section area of said channel and with the volume of said second section being approximately 2.5 times the volume of said first section, the flow of reactor coolant through said housing being sufficient to suspend said plurality of neutron absorbing balls in said second section in a fluidized bed fashion when said reactor cooling flow is above a predetermined limit and whereby said neutron absorbing balls fall into said first section when said reactor coolant flow falls below said predetermined limit thereby effecting a shutdown of the nuclear reactor.

4,343,765

METHOD FOR DEODORIZING AND DISINFECTING AIR

Lewis W. Elston, Atlanta, and David R. Hurst, Norcross, both of Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Dec. 11, 1980, Ser. No. 215,269
Int. Cl.³ A61L 9/015
U.S. Cl. 422—3 2 Claims

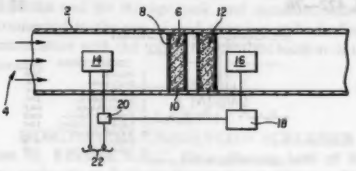
1. A method for disinfecting and deodorizing the air of inhabitable enclosures, comprising the steps of:

passing a stream of said air in a flow direction through conduit means;

positioning at least one bed of support material in said conduit means, said support material being at least one from the group consisting of chemically inert granular material and adsorbing type filter material;

loading an oxidant from the group consisting of iodine and chlorine on said at least one bed of support material;

introducing ozone into said air stream at a first point upstream from said at least one bed of support material, whereby said air stream is purified by said ozone and said oxidant on said support material and whereby said oxidant on said support material is regenerated by said ozone;



providing means in said air stream at a second point downstream from said at least one bed of support material and prior to returning the air stream to the enclosure for detecting the ozone concentration at said second point and;

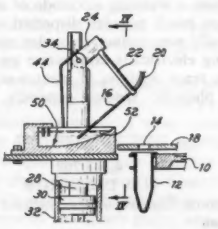
terminating said ozone introduction when the concentration of ozone at said second point exceeds a predetermine level, whereby the build up of ozone in said enclosure is prevented.

4,343,766

DEVICE FOR SAMPLE PICKUP AND WASHING

Giorgio Sisti, Melzo; Bruno Tosi, Carate Brianza, and Adriano Trisciani, Monza, all of Italy, assignors to Carlo Erba Strumentazione S.p.A., Italy

Filed Mar. 2, 1981, Ser. No. 239,175
Claims priority, application Italy, Mar. 7, 1980, 20413 A/80
Int. Cl.³ G01N 1/12, 1/14
U.S. Cl. 422—63 11 Claims

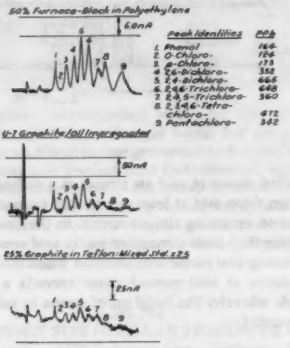


1. A device for automatic sample pick-up and washing, said device comprising a washing trough for washing fluid; a control rod reciprocally movable in a first direction between a control rod sampling position and a control rod washing position; a support component supporting a needle fluidically connected to a suction pump; pivot means mounted with respect to said control rod and said support component for pivoting said support component about an axis along a second direction different from said first direction so that, as the control rod moves to and from its washing position, said support component pivots to and from a support component washing position to move at least the tip of said needle into and out of said washing trough; and means for moving said control rod between said control rod sampling and washing positions to provide a support component sampling position and said support component washing position.

4,343,767
CHROMATOGRAPHY APPARATUS WITH ELECTROCHEMICAL DETECTOR HAVING CARBON-BLACK CONTAINING WORKING ELECTRODE

Merton W. Long; James D. McLean; David N. Armentrout, and Harold H. Gill, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 870,554, Jan. 18, 1978, abandoned. This application Apr. 9, 1981, Ser. No. 252,665
Int. Cl.³ G01N *31/08*
U.S. Cl. 422—70 15 Claims

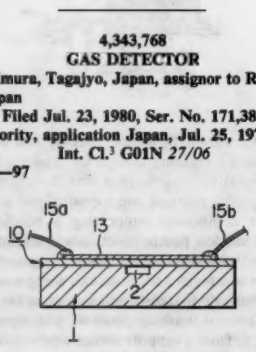


1. Chromatography apparatus which comprises a liquid chromatography column, and as a detector for measuring electro-active sample species in the liquid effluent of the column, an improved electro-chemical cell which comprises a working electrode, a reference electrode, the working electrode communicating with a flow passageway defined by the cell whereby the liquid effluent of the chromatography column is caused to make flow contact with a surface of the working electrode, the electrochemical cell being of the type generally which detects electro-oxidizable and electro-reducible species over a potential range of about ±1.5 volts applied to the working electrode vs. the reference electrode, the improvement which comprises a working electrode of an electrically conductive carbon black powder dispersed within a generally inert, electrically nonconductive binder matrix, said working electrode being electrically conductive and characterized by suitability for trace analysis of electro-active phenolic and halogenated phenolic species generally, but not limited thereto.

4,343,768
GAS DETECTOR

Mitsuteru Kimura, Tagajyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1980, Ser. No. 171,387
Claims priority, application Japan, Jul. 25, 1979, 54-93638
Int. Cl.³ G01N *27/06*
U.S. Cl. 422—97 17 Claims

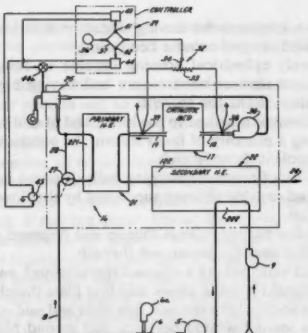


1. A gas detector of the type using an electric heater in which a substrate comprises an upper film and a lower film, said upper film being made of an electrically insulating substance having a resistance to heat while said lower film is made of a substance different from that of said upper film; a recess is formed under said upper film by removing part of said lower film; and an electrically conductive substance is disposed on said upper film at a portion immediately above said recess, thereby providing a heating element, characterized in that the heating element consists of a film of a substance having catalytic effects in the presence of a gas to be detected, or a material responsive to a gas to be detected, deposited on said electrically conductive substance, or consists of said electrically conductive substance having catalytic effects in the presence of a gas to be detected or a substance containing said substance having catalytic effects in the presence of a gas to be detected or a substance responsive to a gas to be detected, and said heating element is exposed to a gas to be detected.

4,343,769
CATALYTIC SOLVENT VAPOR INCINERATING APPARATUS

Gary L. Henkelmann, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 177,065
Int. Cl.³ G05D *23/22;* F01N *3/10;* B01J *8/00*
U.S. Cl. 422—109 8 Claims



1. Apparatus comprising a dryer at which solvent vapors are released and from which they are collected in a gas stream of varying vapor concentration, a catalyst bed having an inlet and an outlet and through which said gas stream is passed for oxidation of its vapor content, controllable heating means for producing a controllably variable heat output, duct means for conducting the gas stream from the dryer successively to said heating means and the inlet of the catalyst bed so that the gas stream can reach said inlet at a temperature high enough for substantially complete oxidation of its vapor content in the catalyst bed, and a constant volume fan by which the gas stream is drawn out of the dryer and caused to flow through the duct means and the catalyst bed, said apparatus being characterized by:

A. a pair of temperature sensors, each of which produces a temperature output that varies with temperature at the sensor,
  (1) one located to respond to the temperature of the gas stream substantially at the inlet of the catalyst bed, and
  (2) the other located to respond to the temperature of the gas stream substantially at the outlet of the catalyst bed;

B. control output means comprising
  (1) summing means connected with both of said sensors

for producing a combined output having a magnitude corresponding to a function of the sum of the temperatures to which said sensors are responding,

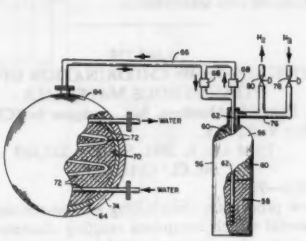
(2) a demand value generator for producing a demand value output having a magnitude comparable with said combined output, and p2 (3) comparison means connected with said summing means and with said demand value generator and whereby a control output is produced that has a magnitude dependent upon the relationship between said combined output and said demand value output; and

C. control means for said heating means, connected with said control output means to receive the output thereof and whereby the heat output of said heating means is so controlled as to tend to maintain said magnitude of said control output substantially constant.

4,343,770
SELF-REGENERATING SYSTEM OF REMOVING OXYGEN AND WATER IMPURITIES FROM HYDROGEN GAS

Harold M. Simons, Orem, Utah, assignor to Billings Energy Corporation

Division of Ser. No. 861,895, Dec. 19, 1971, Pat. No. 4,216,198. This application Mar. 7, 1980, Ser. No. 128,246
Int. Cl.³ B01J *8/04, 12/00;* **F17C** *11/00, 13/00*
U.S. Cl. 422—112 **3 Claims**



1. A hydrogen storage system having a self-cleaning filter means for removing oxygen and water from hydrogen which is being charged to storage tanks containing a hydride-forming, metallic alloy, said system comprising:

(a) a composite filter means comprising a catalyst section containing a catalyst adapted to convert oxygen in the presence of hydrogen to water and an adsorption section containing an adsorbent adapted to adsorb water from hydrogen gas, said catalyst section and adsorption section being in flow communication with each other,

(b) a storage tank containing a hydride-forming metallic reactant which absorbs hydrogen by reacting therewith to form hydrogen-loaded metallic hydride,

(c) flow communicating means connecting the adsorption section of the filter means with the storage tank for flow of hydrogen gas between the filter means and the storage tank, and

(d) manifold means connected in flow communication with the catalyst section of the filter means, said manifold means adapted to deliver hydrogen gas to the catalyst section of the filter means when the storage tank is being filled and to accept hydrogen gas from the catalyst section of the filter means during discharge of the tank, whereby oxygen and water impurities are removed from the hydrogen gas being charged to the storage tank, oxygen being converted to water as the hydrogen passes through the catalyst section of the filter means and water being adsorbed by the adsorbent as the hydrogen passes through the adsorption section of the filter means, and whereby the water is cleaned from the filter as hydrogen is discharged from the storage tank,

the catalyst and the adsorbent in step (a) being contained in an enclosed chamber having top, bottom and side walls, with the adsorbent and the catalyst occupying the lower and the upper portions of the chamber, respectively, and the flow communicating means consisting of:

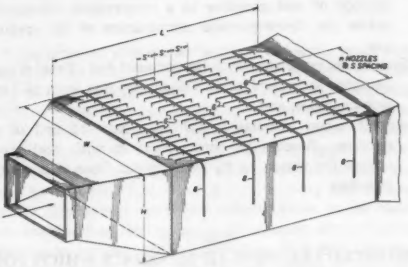
(1) a dip-tube extending through the top wall of the chamber, through the catalyst section, and at least through the major portion of the adsorption section so that the open, lower end of the dip-tube is positioned within the chamber and the upper end of the dip-tube is open to the outside of the chamber, and

(2) coupling means connecting the upper end of said dip-tube to said storage tank for flow of hydrogen gas between the dip-tube and the storage tank, and manifold means being connected to the top of said chamber to be in flow communication with the top of the catalyst section of the filter means.

4,343,771
HORIZONTAL CROSS-FLOW SCRUBBER

William M. Edwards, and C. Peter Huang, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 61,225, Jul. 27, 1979, Pat. No. 4,269,812. This application Dec. 4, 1980, Ser. No. 212,922
Int. Cl.³ B01D *53/18, 53/34;* **B01J** *10/00, 19/04*
U.S. Cl. 422—168 **2 Claims**



1. An apparatus for removing sulfur dioxide from industrial waste gas comprising:

(a) a horizontal, elongate, gas-liquid contacting chamber having a substantially unrestricted flow path, a waste gas inlet means at one end, and a cleaned gas outlet means at the opposite end;

(b) a plurality of spray nozzles for aqueous absorbent positioned at the top of the chamber to direct a corresponding plurality of interfering cones of spray droplets substantially vertically downward, the spray nozzles being horizontally spaced apart a minimum distance of about 0.4 meters to form spray droplets having a maximum interfering spray density at any horizontal plane less than about 100 liters per second per square meter; and

(c) liquid collection and discharge means disposed proximate the bottom of the chamber.

4,343,772
THERMAL REACTOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administation, with respect to an invention of; Harry Levin, Woodland Hills, and Larry B. Ford, Pasadena, both of Calif.

Filed Feb. 29, 1980, Ser. No. 126,063
Int. Cl.³ C22B *26/00*
U.S. Cl. 422—200 **14 Claims**

1. A thermal reactor apparatus for pyrolytically decomposing a precursor gas containing a single decomposable compound into a liquid product and a by-product gas comprising:

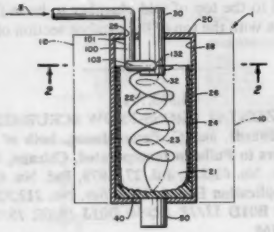
a reactor having walls defining a reaction chamber;

means for heating said reaction chamber to a temperature above the melting point of said liquid product and for

heating chamber to a temperature above the decomposition temperature of the precursor gas;

injector means disposed within the interior of said reaction chamber for vortically introducing said precursor gas into said reaction chamber to form a first outer, forwardly moving vortex containing said precursor gas and said liquid product and a second inner, rearwardly moving vortex containing said by-product gas;

cooling means for cooling said injector portion within the



interior of said chamber to a temperature substantially below the decomposition temperature of the precursor gas;

first means associated with the forward end of said reaction chamber for removing said liquid product from said reaction chamber; and

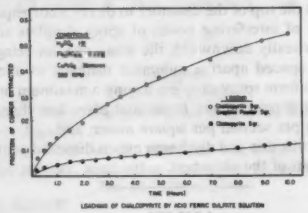
second means associated with the rearward end of said reaction chamber in communication with said second vortex for removing by-product gas from said reaction chamber.

4,343,773

ENHANCED LEACHING OF MINERALS WHICH FORM PRODUCT LAYERS

Jan D. Miller, Salt Lake City, Utah, and George Simkovich, State College, Pa., assignors to University of Utah Research Foundation, Salt Lake City, Utah

Filed Jan. 29, 1981, Ser. No. 229,379
Int. Cl.³ C01G 1/00; C22B 3/00
U.S. Cl. 423—1 **16 Claims**



1. A process for enhancing dissolution of metal values from minerals comprising:

obtaining a mineral, the mineral being characterized by the tendency for a reaction product layer to form about particles of mineral during leaching;

selecting a particulate modifier for suitably altering electronic conductivity characteristics of the reaction product layer;

altering the electronic conductivity characteristics of the reaction product layer by intimately mixing the particulate modifier with the mineral thereby forming particle aggregates;

leaching the particle aggregates, the leaching process solubilizing metal values in the mineral while forming a reaction product layer about particles of the mineral ore; and

enhancing dissolution of metal values in the mineral surrounded by the reaction product layer by increasing electron transport processes across the reaction product layer with the particulate modifier.

4,343,774

METHOD FOR RECOVERING VALUABLE METALS FROM DEACTIVATED CATALYSTS

George L. Tilley, Newport Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Aug. 20, 1979, Ser. No. 67,661
Int. Cl.³ C01G 51/10, 53/10, 39/00, 31/00
U.S. Cl. 423—53 **20 Claims**

1. A process for recovering valuable metals from spent catalyst particles comprising cobalt components intimately composited with a substantial amount of an aluminum-containing refractory oxide, which process comprises:

(1) contacting the catalyst particles with an aqueous sulfuric acid solution,

(2) subsequently subjecting the catalyst particles to conditions of elevated temperature in an oxidizing atmosphere comprising oxygen, and

(3) again contacting the catalyst particles with an aqueous, liquid leaching solution under conditions such that cobalt is extracted into said solution.

4,343,775

ENTRAINED-FLOW CHLORINATION OF FINE TITANIFEROUS MATERIALS

James P. Bonsack, Aberdeen, Md., assignor to SCM Corporation, New York, N.Y.

Filed Apr. 6, 1981, Ser. No. 251,183
Int. Cl.³ C01G 23/02
U.S. Cl. 423—78 **5 Claims**

1. A flow process for chlorinating an iron-containing titaniferous material which comprises reacting discrete powdered particles of titaniferous material and a chlorine-providing material selected from the group consisting of chlorine gas, organochlorides, and mixtures thereof in the presence of a powdered porous anthracite coal reductant said powdered titaniferous material and said powdered anthracite coal reductant each having a particle size smaller than about-140 mesh, said particles of said titaniferous material and said powdered anthracite coal being entrained in and flowing downwardly through a chlorination reaction zone at a temperature of at least about 800° C., until both the iron and the titanium contents of said titaniferous material are substantially chlorinated, said porous anthracite coal reductant being characterized in that it has micropores having a pore diameter of less than about 20 Å and internal surface area within said micropores of at least about 10 m^2/g.

4,343,776

OZONE ABATEMENT CATALYST HAVING IMPROVED DURABILITY AND LOW TEMPERATURE PERFORMANCE

William F. Carr, Monmouth Junction, and James M. Chen, Rahway, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Dec. 22, 1980, Ser. No. 218,374
Int. Cl.³ B01D 53/36
U.S. Cl. 423—210 **17 Claims**

1. A method for catalytically decomposing ozone comprising contacting ozone or an ozone-containing medium with a precious metal catalyst containing as active material:

(a) at least one platinum group metal or catalytically active compound thereof; and

(b) at least one nonprecious Group VIII metal oxide or aluminate;

the arrangement of active material favoring exposure to ozone

of the platinum group over the nonprecious metal oxide or aluminate.

4,343,777

METHOD OF SCRUBBING ACID GASES CONTAINING POLYMERIZABLE ORGANIC COMPONENTS

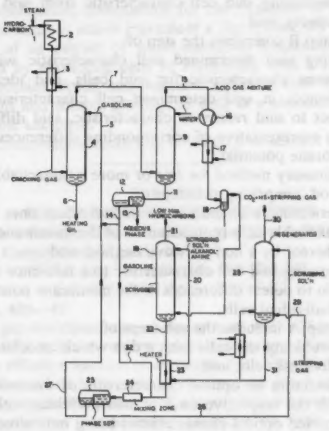
Erich Dannhorn, Wolfratshausen, and Karl Baur, Buchenhain, both of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Sep. 6, 1979, Ser. No. 73,087

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 2839055

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 5 Claims



1. A method of scrubbing acid gases, comprising carbon dioxide and hydrogen sulfide, from a cracking gas mixture resulting from the cracking of a hydrocarbon mixture subjected to cooling and removal of higher boiling components in contact with a liquid gasoline fraction, a gaseous component being separated from said fraction to constitute said mixture and containing polymerizable organic components, which comprises the steps of:

(a) scrubbing the gas mixture, from which condensible substances have been removed by cooling, with an aqueous alkanolamine scrubbing solution;

(b) heating the scrubbing solution following step (a) to an extraction temperature above 60° C. by indirect heat exchange;

(c) treating the heated scrubbing solution of step (b) with a water immiscible organic solvent to extract polymerizable components from the scrubbing liquid at a temperature above 60° C. but below the boiling point of the resulting mixture of the scrubbing liquid and organic solvent, said solvent being a portion of said liquid gasoline fraction;

(d) regenerating the scrubbing liquid following step (c);

(e) cooling the regenerated scrubbing liquid;

(f) recycling the regenerated scrubbing liquid from step (e) to step (a); and

(g) returning the liquid gasoline fraction following extraction in step (c) to the separation stage of the high boiling component from the cooled cracking gas.

4,343,778

PROCESS FOR THE PURIFICATION OF RESIDUAL INDUSTRIAL GASES CONTAINING SMALL QUANTITIES OF SULFUR COMPOUNDS

Jacques Batteux, Serres Morlaas; Claude Blanc, and Pierre Grancher, both of Pau, all of France, assignors to Societe Nationale Elf Aquitaine, Paris, France

Division of Ser. No. 39,384, May 15, 1979, Pat. No. 4,291,003.

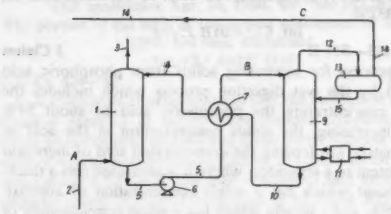
This application Feb. 9, 1981, Ser. No. 232,689

Claims priority, application France, May 15, 1978, 78 14427

The portion of the term of this patent subsequent to Sep. 15, 1981, has been disclaimed.

Int. Cl.³ B01D *53/34*

U.S. Cl. 423—228 4 Claims



1. A purification process for residual industrial gases containing small quantities of H_2S, SO_2, CS_2, COS or sulfur vapor, as well as large quantities of H_2O, CO_2 and N_2, comprising subjecting the residual gases to a catalytic reduction to transform the sulfur containing compounds in said residual gases into H_2S, washing the residual gases with an aqueous amine solution to form a H_2S enriched aqueous amine solution and effluent gases substantially free of H_2S, burning said effluent gases and discharging the burnt effluent gases to the atmosphere, regenerating the H_2S enriched aqueous amine solution by heating to produce gases comprising H_2S and CO_2 and regenerated aqueous amine solution, and, returning said gases comprising H_2S and CO_2 to a sulfur manufacturing unit; characterized in that the temperature of the gases in the process are permanently maintained at a level higher than the dew point of the water contained in the gases at each point in the process such that the H_2O contained in the residual gases is discharged into the atmosphere with said burnt effluent gases.

4,343,779

PROCESS FOR THE CONDENSATION OF PHOSPHATE SOLIDS

Klaus Sommer, Heidelberg; Walter Klemm, Weinheim Ortsteil Rippenweier; Hermann Weber, Hemsbach; Frederich Meinhardt, Birkenheide; Gerhard Schönmann, Ludwigshafen, and Wilhelm Spatz, Ober-Kainsbach, all of Fed. Rep. of Germany, assignors to Benckiser-Knapsack GmbH, Ladenburg, Fed. Rep. of Germany

Division of Ser. No. 123,754, Feb. 22, 1980, Pat. No. 4,293,526.

This application Mar. 3, 1981, Ser. No. 239,975

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1979, 2907453

Int. Cl.³ C01B *15/16, 23/26*

U.S. Cl. 423—305 13 Claims

1. A process for condensing solid phosphate materials which tend to sinter or adhere during condensation in a heated reactor comprising the steps of: introducing a solid phosphate-containing material to be condensed into a reactor; contacting the exterior wall of the reactor with a hot heat transfer medium in order to heat the phosphate material to be condensed in the reactor; agitating the phosphate material in the reactor and pressing the phosphate material in a thin layer against the reactor wall; said thin layer of phosphate material sintering and adhering to the reactor wall; stripping the sintered layer from

the reactor wall; and returning the hot sintered phosphate material to the interior region of said reactor.

4,343,780

PROCESS FOR THE SEPARATION OF SOLIDS FROM PHOSPHORIC ACID

Friedrich Wolstein, Essen; Egbert Hoffmann, Bochum, and Wolfgang Epper, Bergheim-Kenten, all of Fed. Rep. of Germany, assignors to UHDE GmbH, Dortmund, Fed. Rep. of Germany

Filed Jan. 27, 1981, Ser. No. 228,895

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1980, 3003250

Int. Cl.³ C01B *25/16*

U.S. Cl. 423—321 R **3 Claims**

1. A process for separating solids from phosphoric acid produced by the wet digestion process which includes the steps of concentrating the phosphoric acid to about 54% thereby increasing. the solids concentration in the acid to approximately 7% feeding the concentrated acid of increased solids content to a separator, where it is separated into a thickened effluent which has a solids concentration of approximately 15%, and a filtrate which has a solids concentration of less than 0.5, and feeding the thickened effluent from the separator to a bowl centrifuge which is operated to produce a withdrawn slurry having a solids concentration of about 50–60%, and a centrifuged effluent having a solids concentration of about 1 to 6%.

4,343,781

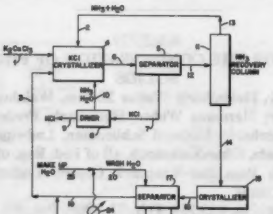
DECOMPOSITION OF 2KCl.CuCl TO PRODUCE CUPROUS CHLORIDE AND POTASSIUM CHLORIDE

John B. Sardisco, Shreveport, La., assignor to Pennzoil Company, Houston, Tex.

Filed Jun. 9, 1981, Ser. No. 272,025

Int. Cl.³ C01G *3/05*; C01D *3/04*

U.S. Cl. 423—493 **13 Claims**



1. A method for the recovery of cuprous chloride and potassium chloride from a complex salt containing these components in aqueous solution which comprises the steps of:

(a) reacting an aqueous solution of the complex salt of potassium chloride and cuprous chloride with ammonia;

(b) separating the resulting solid potassium chloride from a solution containing the cuprous chloride and ammonia;

(c) removing the ammonia from the solution to cause precipitation of solid cuprous chloride, and

(d) recovering the cuprous chloride.

4,343,782

CYTOLOGICAL ASSAY PROCEDURE

Howard M. Shapiro, 238 Highland Ave., West Newton, Mass. 02165

Continuation-in-part of Ser. No. 898,153, Apr. 20, 1978, abandoned. This application Apr. 6, 1979, Ser. No. 27,736

Int. Cl.³ G01N *1/30, 13/00, 21/25, 33/48, 33/52, 33/54, 33/74*

U.S. Cl. 424—3 **51 Claims**

1. A bioassay method for one or more non-excitable cells, said method comprising the steps of:

A. determining a characteristic of individual ones of said non-excitable cells representative of the membrane potential thereof by a non-intrusive method, and

B. comparing said cell characteristic to a reference characteristic to detect differences in the membrane potential of said individual cells,

wherein step A comprises the sub-steps of:

(i) incubating said cells with a cell membrane-permeant ionic dye, and

(ii) detecting an optical property of said individual cells, said optical property being representative of the intracellular dye level in the respective ones of said cells, and determining said cell characteristic from said optical property, and

wherein step B comprises the step of:

comparing said determined cell characteristic with said reference characteristic for said cells, and identifying differences in said determined cell characteristic with respect to said reference characteristic, said differences being representative of corresponding differences in cell membrane potential.

19. A bioassay method for one or more non-excitable cells, said method comprising the steps of:

A. determining a characteristic of individual ones of said non-excitable cells representative of the membrane potential thereof by a non-intrusive method, and

B. comparing said cell characteristic to a reference characteristic to detect differences in the membrane potential of said individual cells,

wherein step A includes the sub-steps of:

(a) incubating the cells with a dye which associates with individual cells, and

(b) detecting an optical characteristic of dye associated with the respective ones of said individual cells, said detected optical characteristics being indicative of the cell membrane potential of the respective ones of said individual cells.

4,343,783

DISPOSABLE ARTICLE

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 15, 1979, Ser. No. 3,320

Claims priority, application United Kingdom, Jan. 13, 1978, 1479/78; May 16, 1978, 19843/78

Int. Cl.³ A61K *9/70*; A61L *15/03*

U.S. Cl. 424—28 **14 Claims**

1. A deodorant disposable porous article for use in contact with human skin, comprising a porous substrate impregnated with from 0.001 to 10% by weight of a deodorant composition having a deodorant value of from 0.50 to 3.5 as measured by the Deodorant Value Test; said deodorant composition comprising from 45 to 100% by weight of deodorant components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances

Class 2: essential oils, extracts, resins and synthetic oils

Class 3: aldehydes and ketones

Class 4: polycyclic compounds

Class 5: esters

Class 6: alcohols, provided that where a component can be

classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of class 1, class 2 and class 4;

(b) the deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition is eliminated from the requirements of (a) and (b).

4,343,784

COMPOSITION AND METHOD EMPLOYING EXTRACTS OF HANSENULA AS A MEDICAMENT

Jacqueline O. Massot, Pontault-Combault, and Jacques N. Astoin, Paris, both of France, assignors to Univablot, Paris, France

Filed Mar. 9, 1981, Ser. No. 241,550

Claims priority, application France, Mar. 10, 1980, 80 05302

Int. Cl.³ A61K *35/78, 31/70, 35/72*

U.S. Cl. 424—45 7 Claims

1. A therapeutic composition for the treatment of infection which contains as active ingredient a therapeutically effective amount of an extract of water-insoluble Hansenula glucans prepared by extracting cells of Hansenula with alkali to remove proteins, lipids, and mannans and with acid to remove glycogens and soluble glucans, as well as a pharmaceutically acceptable excipient.

5. A composition according to claim 1 in aerosol form.

4,343,785

GEL DENTIFRICE COMPOSITIONS

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 10, 1981, Ser. No. 291,263

Int. Cl.³ A61K *7/16, 7/18, 7/22*

U.S. Cl. 424—49 10 Claims

1. A gel dentifrice comprising at least about 15 percent by weight of a polyoxybutylene-polyoxyethylene block copolymer, an effective amount of an essential additive and less than about 85 percent by weight of water, said block copolymer being a cogeneric mixture of conjugated polyoxybutylene-polyoxyethylene compounds containing in their structure oxybutylene groups, oxyethylene groups and an organic radical derived from a water-soluble organic compound containing a plurality of reactive hydrogen atoms and 2 to 12 carbon atoms; the compounds being characterized in that all of the oxybutylene groups are present in polyoxybutylene chains that are attached to the organic radical at the site of a reactive hydrogen atom thereby constituting a polyoxybutylene polymer; the oxyethylene groups being attached to the polyoxybutylene polymer in polyoxyethylene chains; the average molecular weight of the polyoxybutylene polymers in the mixture being at least 1200, as determined by hydroxyl number, and the oxyethylene groups present constituting 50 to 80 percent by weight of the mixture, with the provisos that:

(a) when the hydrophobe molecular weight is about 1200, when the minimum polyoxyethylene content is about 60 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 25 percent by weight of the aqueous gel compositions;

(b) when the hydrophobe molecular weight is about 1800, when the minimum polyoxyethylene content is about 55 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 20 percent by weight of the aqueous gel composition;

(c) when the hydrophobe molecular weight is about 2400, then the minimum polyoxyethylene content is about 50 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 16 percent by weight of the aqueous gel composition;

(d) when the hydrophobe molecular weight is about 3000, then the minimum polyoxyethylene content is about 45 percent by weight of the block copolymer and the minimum block copolymer content to form a gel is about 16 percent by weight of the aqueous gel composition.

4,343,786

DENTIFRICES CONTAINING ALPHA-ALUMINA TRIHYDRATE

Eric Baines, Flixton, and John F. Carr, Knutsford, both of England, assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 50,935, Jun. 21, 1979, which is a continuation of Ser. No. 871,677, Jan. 23, 1978, which is a continuation of Ser. No. 766,658, Feb. 8, 1977, abandoned, which is a continuation of Ser. No. 640,663, Dec. 15, 1975, abandoned.

This application Apr. 24, 1980, Ser. No. 143,067

The portion of the term of this patent subsequent to Aug. 10, 1999, has been disclaimed.

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 5 Claims

1. A toothpaste characterized in that the toothpaste contains abrasive particles of milled alpha-alumina trihydrate, alkali metal monofluorophosphate and alkali metal fluoride, the mol ratio of said monofluorophosphate to said alkali metal fluoride being about 1.5:1 to 5:1 the total amount of said monofluorophosphate and fluoride corresponding to about 500 to 1500 ppm F, and said alpha-alumina trihydrate being reactive with said alkali metal fluoride.

4,343,787

SHAPED OPHTHALMIC INSERTS FOR TREATING DRY EYE SYNDROME

Irving M. Katz, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 769,766, Feb. 17, 1977, abandoned, which is a continuation-in-part of Ser. No. 600,168, Jul. 29, 1975, abandoned. This application Dec. 28, 1978, Ser. No. 973,975

Int. Cl.³ A61K *31/74, 31/79;* A61M *31/00, 7/00*

U.S. Cl. 424—78 26 Claims

1. A solid sterile ophthalmic insert comprising as the sole therapeutically active agent a water soluble solid polymer; said insert having a dissolution time in lacrimal fluids of less than 24 hours and having a surface area of from about 5 to about 800 sq. mm., a length of from about 1–30 mm. and a width and height of from about 0.25 mm. to about 30 mm., said polymer being selected from the group consisting of a cellulose derivative, starch derivative, dextrose, polyalkylene glycol, polyvinylmethyl ether, polyethylene oxide, carboxyvinyl, and mixtures thereof.

4,343,788

ANTIMICROBIAL POLYMER COMPOSITIONS

Robert V. Mustacich; Donald S. Lucas, and Roger L. Stone, all of Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 29, 1979, Ser. No. 53,619

Int. Cl.³ A61K *31/74*

U.S. Cl. 424—78 4 Claims

1. A composition of matter, comprising: a toxicologically-acceptable, medical-grade elastomeric polymer, said polymer having releasably incorporated within the polymer matrix a safe and effective amount of one or more free n-alkane monocarboxylic acid antimicrobial agents or salts thereof, having from about 4 to about 10 carbon atoms, said polymer containing from about 0.1% to about 40% by weight of a substantially non-antimicrobial proton donor selected from the group consisting of citric acid, tartaric acid, malic acid, fumaric acid, maleic acid, malonic acid, ascorbic acid, barbituric acid, and mixtures thereof.

4,343,789

SUSTAINED RELEASE PHARMACEUTICAL COMPOSITION OF SOLID MEDICAL MATERIAL

Hiroitsu Kawata, Kawagoe; Masayoshi Aruga, Ageo; Tadayoshi Ohmura, Niiza; Takashi Sonobe, Saitama; Satoru Yoneya, Omiya, and Chiharu Sone, Matsudo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1980, Ser. No. 165,244

Claims priority, application Japan, Jul. 5, 1979, 54/85209; Mar. 22, 1980, 55/36514

Int. Cl.³ A61K *9/14, 9/16, 9/20, 31/74*

U.S. Cl. 424—78 13 Claims

1. A sustained release pharmaceutical composition comprising a coronary and cerebral vascular dilating-effective amount of an amorphous form of nicardipine or a salt thereof, and polyethylene oxide in the form of a fine powder or fine particle granules.

4,343,790

CONTROLLED RELEASE ACRYLIC POLYMER COATED GRANULAR PESTICIDAL COMPOSITIONS WITH ATTENDANT REDUCED DERMAL TOXICITY

Nunzio R. Pasarela, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 9,883, Feb. 6, 1979, abandoned. This application Aug. 4, 1980, Ser. No. 174,951

Int. Cl.³ A01N *25/10, 57/00, 25/00;* A61K *31/78*

U.S. Cl. 424—81 9 Claims

1. A solid particulate composition comprising particles of an inert sorptive or non-sorptive granular carrier impregnated or coated with a pesticidally effective amount of a phosphorus pesticide which is O,O-diethyl-S-(ethylthio)methylphosphorodithioate or O,O-diethyl-S-{[(1,1-dimethylethyl)thio]-methyl} phosphorodithioate, and wherein the impregnated or coated carrier is coated with a finely divided sorptive substrate and an acrylic polymer of a (1) hard, thermoplastic acrylic polymer having an intrinsic viscosity of from 0.75 dl/g to 3.1 dl/g at 30° C. in tetrahydrofuran, (2) hard, self-crosslinking thermoplastic acrylic polymers having an intrinsic viscosity of from 1.0 dl/g to 2.0 dl/g at 30° C. in dimethylformamide or (3) acrylic polymers having an intrinsic viscosity of from 0.05 dl/g to 0.1 dl/g at 30° C. in butanol, wherein the thus-obtained composition is characterized by decreased mammalian dermal toxicity and sustained pesticidal activity.

4,343,791

CYCLOHEXYL PHENETHYLETHER DERIVATIVES FOR COMBATTING TOBACCO BEETLES

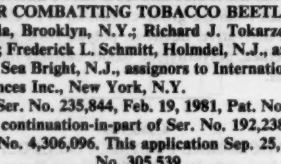
Jacob Kiwala, Brooklyn, N.Y.; Richard J. Tokarzewski, Keyport, N.J.; Frederick L. Schmitt, Holmdel, N.J., and Mark A. Sprecker, Sea Bright, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 235,844, Feb. 19, 1981, Pat. No. 4,324,923, which is a continuation-in-part of Ser. No. 192,238, Sep. 30, 1980, Pat. No. 4,306,096. This application Sep. 25, 1981, Ser. No. 305,539

Int. Cl.³ A01N *25/00, 31/00*

U.S. Cl. 424—84 3 Claims

1. A method of attracting and destroying *Lasioderma sericorne* (*F.*) comprising applying to an area contaminated with said *Lasioderma sericorne* (*F.*) at least one compound defined according to the structure:



wherein R_1, R_2, R_3 and R_4 are the same or different and each represents methyl or hydrogen with the proviso that one of R_1, R_2, R_3 and R_4 is methyl and the other three of R_1, R_2, R_3 and R_4 are hydrogen, said attractant being applied to said area in an amount sufficient to attract said *Lasioderma sericorne* (*F.*).

4,343,792

ANIMAL VACCINE, AGAINST COLIBACILLOSIS, PREPARATION AND USE

Philippe Gouet, Beaumont; Michel G. Contrepois; Henri-Charles Dubourguier, both of Clermont-Ferrand; Jean-Pierre Girardeau, Romagnat; Hubert L. J. Goby; Therese M. Goby, both of Nevers; Anne M. Goby, Varennes Vauzelles, and Genevieve Goby, La Chapelle St Ursin, all of France, assignors to Institut National de la Recherche Agronomique, Paris, France

Filed Oct. 3, 1980, Ser. No. 193,449

Claims priority, application France, Mar. 10, 1979, 79 24665

Int. Cl.³ A61K *39/00, 39/108*

U.S. Cl. 424—92 7 Claims

1. Animal anti-colibacillary vaccine characterized in that it contains at least one antigen originating from strains of *E. coli* selected among the Y^{30}, $31A^+$ and $47A^+$ strains.

6. A method for the protection of newborn animals against diarrhea comprising applying an effective amount of the vaccine or vaccinal preparation according to any one of claims 1, 2 and 5 to gestating dams.

4,343,793

PROCESS FOR OBTAINING INTACT AND VIABLE LEUCOCYTES AND THROMBOCYTES FROM BLOOD

Josef H. Wissler, Bad Nauheim, Fed. Rep. of Germany, assignor to Max-Planck Gesellschaft zur Forderung der Wissenschaften, Gottingen, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,703

Claims priority, application Fed. Rep. of Germany, Mar. 10, 1980, 3009126

Int. Cl.³ A61K *35/14;* A01N *1/02*

U.S. Cl. 424—101 11 Claims

1. A process for recovering leucocytes and thrombocytes from blood, which comprises:

(a) contacting the blood with an erythrocyte-aggregating substance to produce a liquid component and aggregated erythrocytes and separating the aggregated erythrocytes from the liquid component;

(b) centrifuging the liquid component at a speed having an average force of at most about 400×g and at a temperature of about 0° to 37° C. for about 5 to 15 min to produce a thrombocyte-containing supernatant and sedimented leucocytes and separating the sedimented leucocytes from the supernatant;

(c) suspending the sedimented leucocytes in water or up to a 0.4% sodium chloride solution at a pH of about 6.0 to 8.5, and at a maximum temperature of about +8° C. for about 20 to 60 seconds, and thereafter readjusting the suspension to physiological concentration and separating the leucocytes from the suspension.

4,343,794

METHOD OF REDUCING INTRAOCULAR PRESSURE WITH SALTS OF VANADIC ACID

Steven Podos, New York, N.Y.; Theodore Krupin, Creve Coeur, and Bernard Becker, University City, both of Mo., assignors to Mt. Sinai, New York, N.Y. and Washington University, St. Louis, Mo.

Filed May 6, 1980, Ser. No. 147,172

Int. Cl.³ A61K *33/24, 31/28*

U.S. Cl. 424—131 6 Claims

1. A method of reducing intraocular pressure in mammals which comprises applying topically to the eye a salt of vanadic acid, in which the vanadium has a valence of from 3 to 5, in an amount effective to reduce intraocular pressure.

4,343,795
BIOLOGICALLY ACTIVE AMIDES

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 927,271, Jul. 24, 1978, Pat. No. 4,244,944. This application Sep. 25, 1980, Ser. No. 190,704
Claims priority, application United Kingdom, Nov. 24, 1977, 48980/77
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 8 Claims

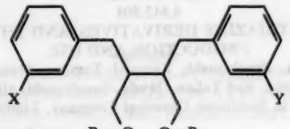
1. Tyr. D-Met(O). Gly. Phe(4NO_2). ProNH_2.

4,343,796
2,3-BIS-HYDROXYBENZYL-DERIVATIVES

Marinus B. Groen, Schayk, Netherlands, assignor to AKZO NV, Oss, Netherlands

Filed Jun. 11, 1981, Ser. No. 272,727
Claims priority, application United Kingdom, Jun. 24, 1980, 8020688
Int. Cl.³ A61K *31/695*; C07C *69/773*; A61K *31/35*; C07C *69/017*
U.S. Cl. 424—184 4 Claims

1. A compound of the formula



wherein X and Y are the same or different and are selected from the group consisting of hydroxy, alkoxy having 1 to 10 carbon atoms, trimethylsilyloxy, tetrahydropyranyl-2-oxy, (C_{1-6})-alkanoyloxy, (C_{7-10})-aroyloxy, (C_{7-10})-aralkanoyloxy, and a (C_{7-10})-aralkenoyloxy R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, (C_{1-6})-alkanoyl, (C_{7-10})-aroyl, (C_{7-10})-aralkanoyl, and a (C_{7-10})-aralkenoyl, and R_1 and R_2, when taken together with the oxygen atoms to which they are attached, represent an acetal group.

4. An anti-inflammatory pharmaceutical composition containing, as active ingredient, an anti-inflammatory effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier or diluent.

4,343,797
SYNTHETIC WHOLE BLOOD AND A METHOD OF MAKING THE SAME

Charles S. Ecanow, 4118 Skokiana Ter., Skokie, Ill. 60076

Continuation-in-part of Ser. No. 146,029, May 2, 1980, abandoned, which is a continuation of Ser. No. 47,021, Jun. 11, 1979, abandoned. This application Jan. 5, 1981, Ser. No. 222,364
Int. Cl.³ A61K *31/685, 45/00*
U.S. Cl. 424—199 19 Claims

1. A method of making a synthetic whole blood which comprises the steps of:

(A) preparing a solution by dispersing from 5 to 15% weight to volume of powdered albumin in distilled water containing 0.9% weight to volume sodium chloride, 1 to 5% weight to volume urea and 0.1 to 10% weight to volume of a phospholipid;

(B) Storing the solution, undisturbed at 4 degrees C. for 12 hours, thereby producing a two phase coacervate system;

(C) Removing said coacervate system from refrigeration and adding such amount of distilled water at ambient temperature to the coacervate system as will result in a 5% weight to volume of albumin;

(D) Adding such amount of sodium chloride to the two phase coacervate system as will render the said system isotonic with whole human blood; and

(E) Emulsifying the two phase coacervate system to produce droplets ranging in size from 2 to 9 microns in size.

4,343,798
TOPICAL ANTIMICROBIAL ANTI-INFLAMMATORY COMPOSITIONS

Mahdi B. Fawzi, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 23, 1981, Ser. No. 276,556
Int. Cl.³ A01N *45/00*
U.S. Cl. 424—240 16 Claims

1. A topical pharmaceutical composition, having a pH no greater than about 5, comprising a safe and effective amount of an antimicrobial agent selected from C_5–C_{12} fatty acids and mixtures thereof, together with a safe and effective amount of a corticosteroid component.

2. A composition according to claim 1 wherein the corticosteroid component is selected from the group consisting of beclomethasone dipropionate, clobetasol propionate, diflucortolone valerate, fluocinolone acetonide, betamethasone benzoate, betamethasone dipropionate, betamethasone valerate, desonide, desoxymethasone, diflorasone diacetate, fluclorolone acetonide, fluocinonide, fluocortolone, fluprednidene (fluprednylidene) acetate, flurandrenolone, halcinonide, hydrocortisone butyrate, triamcinolone acetonide, clobetasone butyrate, flumethasone pivalate, fluocortin butylester, hydrocortisone with urea, dexamethasone, hydrocortisone alcohol or acetate, methylprednisolone, and mixtures thereof.

4,343,799
USE OF DERIVATIVES OF 6α-METHYLPREDNISOLONE FOR THE PREVENTION OR REDUCTION OF ADRIAMYCIN-INDUCED CARDIOTOXICITY

Jay W. Heckler, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 20, 1981, Ser. No. 245,575
Int. Cl.³ A61K *31/56*
U.S. Cl. 424—243 8 Claims

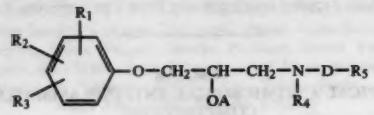
1. A method for the prevention of Adriamycin-induced cardiotoxicity which comprises administering intravenously to a patient expecting Adriamycin chemotherapy, a formulation comprising a compound selected from the group consisting of water soluble 21-dibasic esters of 1-dehydro-6α-methylhydrocortisone and their salts in a pharmaceutically acceptable carrier.

4,343,800
1-ARYLOXY-2-HYDROXY-3[(HETEROCYCLIC-SUBSTITUTED ALKYL)-AMINO]PROPANES AND SALTS THEREOF

Herbert Köpe, Ingelheim am Rhein; Anton Mentrup, Mainz-Kastel; Ernst-Otto Renth; Kurt Schromm, both of Ingelheim am Rhein; Wolfgang Hoefke, Budenheim, and Gojko Muncevic, Ingelheim am Rhein, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Division of Ser. No. 112,640, Jan. 16, 1980, Pat. No. 4,296,117, which is a division of Ser. No. 4,279, Jan. 17, 1979, Pat. No. 4,256,756, which is a continuation-in-part of Ser. No. 838,450, Oct. 3, 1977, abandoned. This application Apr. 20, 1981, Ser. No. 255,751
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1976, 2644833
Int. Cl.³ C07D *265/36, 215/22*; A61K *31/415, 31/47, 31/535*; C07D *233/36*
U.S. Cl. 424—248.5 7 Claims

1. A compound of the formula



wherein

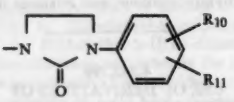
R_1 is hydrogen; halogen; trifluoromethyl; nitro; alkyl of 1 to 8 carbon atoms; alkoxy of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 8 carbon toms; alkenyl of 2 to 5 carbon atoms; alkynyl of 2 to 5 carbon atoms; alkenyloxy of 3 to 6 carbon atoms; alkynyloxy of 3 to 6 carbon atoms; $-(CH_2)_x-A'$, where x is 1, 2 or 3 and A′ is cyano, amino, carboxamido or hydroxyl; phenoxy; benzyloxy; or $-CH_2-SO_2-CH_3$;

R_2 is hydrogen, halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; aralkoxy of 7 to 14 carbon atoms; alkenyl of 2 to 4 carbon atoms; nitro; or, together with R_3, $-CH=CH-CH=CH-$, which is attached to carbon atoms of the phenyl ring in o-position with respect to each other;

R_3 is hydrogen, halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; or aralkoxy of 7 to 14 carbon atoms;

R_4 is hydrogen; alkyl of 1 to 5 carbon atoms; or aralkyl of 7 to 14 carbon atoms;

R_5 is

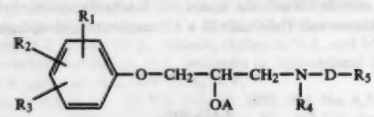


where R_{10} and R_{11} are each hydrogen, halogen, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, trifluoromethyl, carboxamido or, together with each other $-O-(CH_2)_y-O-$, where y is 1 or 2, attached to carbon atoms of the phenyl ring in o-position with respect to each other;

D is alkylene of 1 to 12 carbon atoms; and

A is lower alkanoyl; or a non-toxic, pharmacologically acceptable acid addition salt thereof.

4. A compound of the formula



wherein

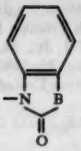
R_1 is hydrogen; halogen; trifluoromethyl; nitro; alkyl of 1 to 8 carbon atoms; alkoxy of 1 to 4 carbon atoms; alkoxyalkyl of 2 to 8 carbon atoms; alkenyl of 2 to 5 carbon atoms; alkynyl of 2 to 5 carbon atoms; $-(CH_2)_x-A'$, where x is 1, 2 or 3 and A′ is cyano, amino, carboxamido or hydroxyl; phenoxy; benzyloxy; or $-CH_2-SO_2-CH_3$;

R_2 is hydrogen, halogen, alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; aralkoxy of 7 to 14 carbon atoms; alkenyl of 2 to 4 carbon atoms; nitro; or, together with R_3, $-CH=CH-CH=CH-$, which is attached to carbon atoms of the phenyl ring in o-position with respect to each other;

R_3 is hydrogen; halogen; alkyl of 1 to 4 carbon atoms; alkoxy of 1 to 4 carbon atoms; or aralkoxy of 7 to 14 carbon atoms;

R_4 is hydrogen; alkyl of 1 to 5 carbon atoms; or aralkyl of 7 to 14 carbon atoms;

R_5 is



where B is $-O-CH_2-$, where the oxygen atom is attached to the phenyl ring, or $-(CH_2)_2-$;

D is alkylene of 1 to 12 carbon atoms; and

A is hydrogen or lower alkanoyl, or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of blocking the α- and β-adrenergic receptors in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim **4**.

4,343,801

1,2,4-TRIAZINE DERIVATIVES, AND THEIR PRODUCTION AND USE

Hideo Agui, Sonehigashi; Katsumi Tamoto, Hyogo; Shunji Aono, Osaka, and Takao Okuda, Sonehigashi, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

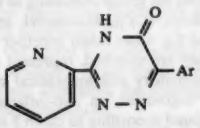
Filed Dec. 3, 1980, Ser. No. 212,442

Claims priority, application Japan, Dec. 3, 1979, 54/157249; Sep. 27, 1980, 55/133348

Int. Cl.[3] **C07D** *401/04;* **A01N** *43/64;* **C07D** *401/14;* **A01N** *43/10*

U.S. Cl. 424—249 **18 Claims**

1. A compound of the formula:



wherein Ar is a phenyl group substituted with a member selected from the group consisting of halogen, C_1–C_8 alkyl, C_1–C_8 alkoxy, C_1–C_8 alkylthio, trihalomethyl, cyano, and phenoxy, or a thienyl group substituted with halogen.

16. A method of destroying fungi which comprises applying a fungicidal amount of the compound of claim **1** to fungi.

4,343,802

2-(3-SUBSTITUTED AMINO-2-HYDROXYPROPOXY)-3-PIPERIDINO PYRAZINES FOR USE IN TREATING HYPERTENSION

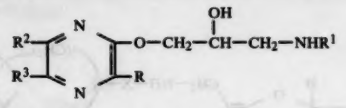
Burton K. Wasson, Valois, Canada, and Leonard M. Weinstock, Belle Mead, N.J., assignors to Merck, Sharp & Dohme (I.A.) Corp., Rahway, N.J.

Continuation of Ser. No. 861,807, Dec. 19, 1977, abandoned, which is a division of Ser. No. 775,678, Mar. 8, 1977, Pat. No. 4,193,995, which is a division of Ser. No. 584,439, Jun. 6, 1975, Pat. No. 4,042,586, which is a division of Ser. No. 408,032, Oct. 19, 1973, Pat. No. 3,946,009, which is a continuation-in-part of Ser. No. 341,241, Mar. 15, 1973, abandoned. This application Jul. 3, 1980, Ser. No. 165,577

Int. Cl.[3] **A61K** *31/495;* **C07D** *241/18*

U.S. Cl. 424—250 **7 Claims**

1. A pyrazine compound having the structure



I

or a pharmacologically acceptable salt thereof wherein

R represents piperidino;

R^1 represents a straight or branched chain C_{3-6}alkyl, a straight or branched chain hydroxy substituted C_{3-6}alkyl, a straight or branched chain C_{3-6}alkinyl, phenyl-C_{1-6}alkyl or indolyl-C_{1-6}alkyl;

R^2 and R^3 can represent the same or different substituents and represent hydrogen, C_{1-3}alkyl, C_{5-7}cycloalkyl, C_{1-3}alkoxy, phenoxy, phenyl, substituted phenyl wherein the substituent is C_{1-3}alkyl, C_{1-3}alkoxy, amino, acylamino, nitro or halo.

2. A pharmaceutical composition for use in hypertension in unit dosage form comprising a pyrazine of claim 1 and a carrier.

4,343,803

2-TRICHLOROMETHYL-4-PYRIMIDINYL CARBAMATES AND THEIR USE AS FUNGICIDES

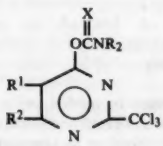
Lawrence E. Katz, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed May 4, 1981, Ser. No. 259,792

Int. Cl.³ A01N *43/54*; C07D *239/34*

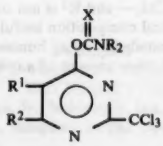
U.S. Cl. 424—251 **26 Claims**

1. A compound having the formula:



wherein X is an atom selected from the group consisting of oxygen and sulfur; R is a lower alkyl group having 1 to 4 carbon atoms or a phenyl group or R_2 is $-(CH_2)_n-$, where n is 4 or 5; R^1 is hydrogen, a lower alkyl group having 1 to 4 carbon atoms, halo or nitro; and R^2 is a lower alkyl group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms.

21. A method of controlling fungi which comprises contacting said fungi with a fungicidally effective amount of a compound having the formula:



wherein X is an atom selected from the group consisting of oxygen and sulfur; R is a lower alkyl group having 1 to 4 carbon atoms or a phenyl group or R_2 is $-(CH_2)_n-$, where n is 4 or 5; R^1 is hydrogen, a lower alkyl group having 1 to 4 carbon atoms, halo or nitro; and R^2 is a lower alkyi group having 1 to 4 carbon atoms or a haloalkyl group having 1 to 4 carbon atoms.

4,343,804

4-AMINO-3-QUINOLINECARBOXYLIC ACIDS AND ESTERS-ANTISECRETORY ANTI-ULCER COMPOUNDS

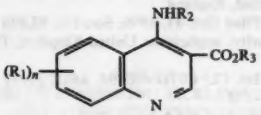
Harry R. Munson, Jr., and Reevis S. Alphin, both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 23,981, Mar. 26, 1979, abandoned. This application Mar. 4, 1980, Ser. No. 127,153

Int. Cl.³ A61K *31/47*

U.S. Cl. 424—258 **104 Claims**

1. A method of inhibiting secretion of gastric acid and/or treating peptic ulcers in mammals which comprises administering to a mammal an effective amount of a compound having the formula:



wherein;

R_1 is selected from the group consisting of loweralkyl, phenyl, O-loweralkyl, S-loweralkyl, halogen, trifluoromethyl, cyano and dialkylamino,

R_2 is selected from the group consisting of loweralkyl, phenyl, phenylloweralkyl or phenyl substituted by 1–3 radicals taken from among loweralkyl, O-loweralkyl, S-loweralkyl, halogen, cyano, hydroxy, carbamoyl, carboxy, acetyl, trifluoromethyl and nitro,

R_3 is selected from the group consisting of hydrogen, loweralkyl, loweralkyldimethylamino, loweralkyl-loweralkoxy, and allyl,

n is 0, 1 or 2, and

the pharmaceutically acceptable addition salts thereof.

4,343,805

HETEROCYCLIC COMPOUNDS

Roger Crossley, and Kay H. Dickinson, both of Reading, England, assignors to John Wyeth & Brother Limited, Maidenhead, England

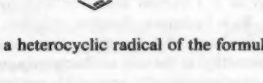
Continuation of Ser. No. 98,421, Nov. 29, 1979, abandoned. This application Dec. 18, 1980, Ser. No. 217,925

Claims priority, application United Kingdom, Dec. 16, 1978, 48813/78

Int. Cl.³ C07D *401/12*; A61K *31/435*

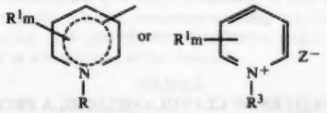
U.S. Cl. 424—263 **11 Claims**

1. A compound of the formula I



I

wherein Y is a heterocyclic radical of the formula



(V) (VII)

wherein R is hydrogen or lower alkyl, R^1 is hydrogen, lower alkyl, hydroxylower alkyl, loweralkoxylowerealkyl, loweralkoxy, halogen, formyl, phenyl, phenylalkyl or acetal, m is 1 or 2, R^3 is lower alkyl, phenyl or aralkyl of 7 to 12 carbon atoms, Z^- is an anion, and the dotted lines in formula V represent an optional double bond in one of the indicated positions, A is a saturated or unsaturated alkylene radical having from 1 to 6

carbon atoms, which may be substituted by lower alkyl of 1 to 6 carbon atoms, S is sulphur, and acid addition salts thereof, with the provisos that (1) when Y is a radical of formula VII then A is CH_2 and (2) when more than one R^1 radical is present in the molecule then the R^1 radicals may be the same or different.

4,343,806

BENZYLAMINO CLAVULANATES AND THEIR PRODUCTION

John B. Harbridge, Coulsdon, England, assignor to Beecham Group Limited, England

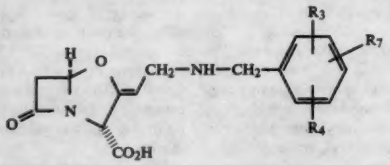
Filed Oct. 11, 1979, Ser. No. 83,838

Claims priority, application United Kingdom, Oct. 25, 1978, 41957/78

Int. Cl.³ C07D *498/04;* A61K *31/42*

U.S. Cl. 424—272 **76 Claims**

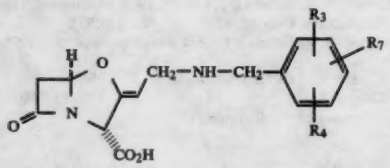
1. A compound of the formula (II):



(II)

wherein R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or alkanoyloxy of 1–3 carbon atoms, R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxy of 1–3 carbon atoms, and R_7 is nitro, cyano, amino or aminomethyl.

25. A pharmaceutical composition useful for treating bacterial infections in humans or domestic mammals which comprises an antibacterially effective amount of a compound of the formula (II):



(II)

wherein R_3 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms, alkoxyl of 1–3 carbon atoms or alkanoyloxy of 1–3 carbon atoms, R_4 is hydrogen, fluorine, chlorine, alkyl of 1–3 carbon atoms or alkoxy of 1–3 carbon atoms, and R_7 is nitro, amino or aminomethyl as the sole antibacterial agent, in combination with a pharmaceutical acceptable carrier.

4,343,807

DERIVATIVES OF CLAVULANIC ACID, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Irene Stirling, Reigate, and Brian P. Clarke, Kingswood, both of England, assignors to Beecham Group Limited, England

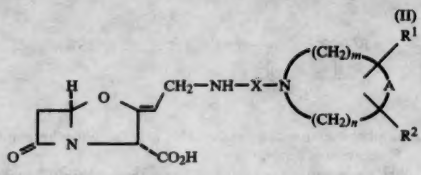
Filed Sep. 24, 1980, Ser. No. 190,463

Claims priority, application United Kingdom, Sep. 27, 1979, 7933447; Oct. 6, 1979, 7934761

Int. Cl.³ C07D *498/04;* A61K *31/42*

U.S. Cl. 424—272 **114 Claims**

1. A compound of the formula (II):



(II)

a pharmaceutically acceptable salt thereof, an ester thereof of the formula:

wherein A_1 is alkyl of 1 to 6 carbon atoms unsubstituted or monosubstituted by alkoxy of 1 to 7 carbon atoms or alkanoyloxy of 1 to 7 carbon atoms, or A_1 is a moiety of the sub-formula (a):

$$CHA_2A_3 \quad \text{(a)}$$

wherein A_2 is alkenyl of up to 5 carbon atoms, alkynyl of up to 5 carbon atoms, or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety; and A_3 is hydrogen, alkyl of up to 4 carbon atoms or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety or A_1 is ethoxycarbonyloxymethyl, methoxycarbonyloxyethyl, ethoxycarbonyloxyethyl, or a moiety of the formula (b), (c) or (d):

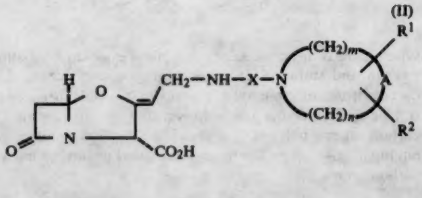
$$—CH_2—OA_5 \quad \text{(b)}$$

$$—CH_2—COA_5 \quad \text{(c)}$$

$$—CHA_4—COOA_5 \quad \text{(d)}$$

wherein A_4 is hydrogen or methyl, A_5 is phenyl or benzyl, either of which is unsubstituted or mono-substituted by 1 or 2 alkyl or alkoxyl moieties of up to 3 carbon atoms or either of which is substituted by a fluorine, chlorine or bromine atom or a nitro moiety and in formulae (c) and (d) is also alkyl of up to 4 carbon atoms; or A_4 and A_5 together with the —CH—O—CO moiety form an orthophenylene moiety which is unsubstituted or substituted by one or two alkyl or alkoxyl moieties of up to 3 carbon atoms, or by a fluorine, chlorine or bromine atom or a nitro moiety, or an acid addition salt of said ester wherein X is alkylene of 1 to 6 carbon atoms; m is 1, 2, or 3; n is 1, 2 or 3; A is oxygen or sulphur; R^1 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy or phenyl; and R^2 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms or phenyl; with the proviso that if m and n are both 1, then A is $—CH_2—$ and R^2 is not oxo.

39. A pharmaceutical composition useful for treating bacterial infections in mammals including humans which comprises an antibacterially effective amount of a compound of the formula (II):



(II)

a pharmaceutically acceptable salt thereof, an ester thereof of the formula:

wherein A_1 is alkyl of 1 to 6 carbon atoms unsubstituted or mono-substituted by alkoxy of 1 to 7 carbon atoms or alkanoyloxy of 1 to 7 carbon atoms, or A_1 is a moiety of the sub-formula (a):

$$CHA_2A_3 \quad (a)$$

wherein A_2 is alkenyl of up to 5 carbon atoms, alkynyl of up to 5 carbon atoms, or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety; and A_3 is hydrogen, alkyl of up to 4 carbon atoms or phenyl unsubstituted or mono-substituted by a fluorine, chlorine or bromine atom or by a nitro, alkyl of up to 4 carbon atoms or alkoxyl of up to 4 carbon atoms moiety or A_1 is ethoxycarbonyloxymethyl, methoxycarbonyloxyethyl, ethoxycarbonyloxyethyl, or a moiety of the formula (b), (c) or (d):

$$—CH_2—OA_5 \quad (b)$$

$$—CH_2—COA_5 \quad (c)$$

$$—CHA_4—COOA_5 \quad (d)$$

wherein A_4 is hydrogen or methyl, A_5 is phenyl or benzyl, either of which is unsubstituted or mono-substituted by 1 or 2 alkyl or alkoxyl moieties of up to 3 carbon atoms or either of which is substituted by a fluorine, chlorine or bromine atom or a nitro moiety and in formulae (c) and (d) is also alkyl of up to 4 carbon atoms; or A_4 and A_5 together with the —CH—O—CO moiety form an orthophenylene moiety which is unsubstituted or substituted by one or two alkyl or alkoxyl moieties of up to 3 carbon atoms, or by a fluorine, chlorine or bromine atom or a nitro moiety, or an acid addition salt of said ester wherein X is alkylene of 1 to 6 carbon atoms; m is 1, 2 or 3; n is 1, 2 or 3; A is oxygen or sulphur; R^1 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, hydroxy or phenyl; and R^2 is hydrogen, oxo, alkyl of 1 to 6 carbon atoms or phenyl, with the proviso that if m and n are both 1 then A is —CH_2— and R^2 is not oxo as the sole antibacterial agent, in combination with a pharmaceutically acceptable carrier.

4,343,808

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES

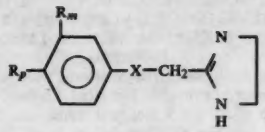
Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 88,427, Oct. 25, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,245

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **9 Claims**

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof wherein X represents sulfur, oxygen or imino; and R_m and R_p each independently represent hydrogen, cyano, nitro, alkylthio, alkylsulfinyl, alkylsulfonyl, alkyl or trifluoromethyl.

4,343,809

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES EMPLOYING 2-((HALOPHENOXY)METHYL)-2-IMIDAZOLINES

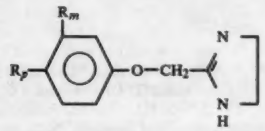
Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1980, Ser. No. 200,247

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **3 Claims**

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein R_m represents hydrogen or alkyl; and R_p represents chloro, bromo, fluoro or iodo.

4,343,810

METHOD OF INHIBITING SICKLING OF SICKLE ERYTHROCYTES USING 2-((HALOANILINO)METHYL)-2-IMIDAZOLINES

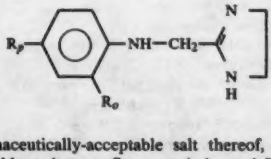
Robert J. Broersma, Jr., Noblesville, Ind., and Gayle A. Spittka, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1980, Ser. No. 200,248

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **3 Claims**

1. A method for inhibiting the sickling of red blood cells prone to sickle in blood containing said cells which comprises introducing into said blood an effective sickle inhibiting amount of a compound of the formula:



or a pharmaceutically-acceptable salt thereof, wherein R_o represents chloro, bromo, fluoro or iodo; and R_p represents hydrogen, chloro, bromo, fluoro or iodo.

4,343,811
2[3-(4-CHLOROPHENYL)-1,2-DIMETHYL-1H-INDOL-5-YLOXY]-2-METHYL PROPANOIC ACID AND HYPERLIPIDEMIC OR ATHEOSCLEROTIC USE THEREOF

Rudolf Hurnaus; Gerhart Griss; Wolfgang Grell, all of Biberach; Robert Sauter, Laupheim; Bernhard Eisele; Nikolaus Kaubisch, both of Biberach; Eckhard Rupprecht, Winterstettenstadt, and Joachim Kühling, Biberach, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Feb. 29, 1980, Ser. No. 126,006

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1979, 2909779

Int. Cl.³ C07D *209/04;* A61K *31/40*

U.S. Cl. 424—274 5 Claims

1. The compound 2-[3-(4-chlorophenyl)-1,2-dimethyl-1H-indol-5-yloxy]-2-methyl-propanoic acid or a non-toxic, pharmacologically acceptable acid addition salt thereof.

5. The method of treating hyperlipidemia or atherosclerotic alteration of the vessel system in a warm-blooded animal, which comprises perorally, parenterally, or rectally administering to said animal an effective lipid-level lowering amount of a compound of claim 1, 2, or 3.

4,343,812
ANTIDEPRESSANT 2-AMINO-AND-2-(SUBSTITUTED AMINO)-CIS-HEXAHYDRO-CARBAZOLES, COMPOSITIONS AND USE

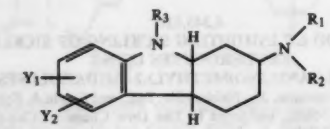
Leonard J. Fliedner, Jr., Point Lookout, N.Y., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 887,779, Mar. 17, 1978, Pat. No. 4,254,134. This application Jun. 3, 1980, Ser. No. 155,977

Int. Cl.³ A61K *31/40;* C07D *209/88*

U.S. Cl. 424—274 24 Claims

1. A compound of the formula



(I)

wherein

R_1 is hydrogen, methyl, ethyl, or

where R is hydrogen, or C_1–C_4 alkyl;

R_2 is hydrogen or methyl;

R_3 is hydrogen, methyl or ethyl;

Y_1 is hydrogen, fluorine, chlorine, bromine, hydroxy, methyl, benzyloxy or C_1–C_6 alkoxy;

Y_2 is hydrogen or chlorine; with the proviso that Y_2 can be chlorine only when Y_1 is chlorine;

or a pharmaceutically suitable salt thereof.

9. A pharmaceutical composition consisting essentially of a suitable pharmaceutical carrier and an effective antidepressant amount of a compound of claim 1.

4,343,813
CARBOXAMIDE COMPOUNDS AS SRS-A ANTAGONISTS

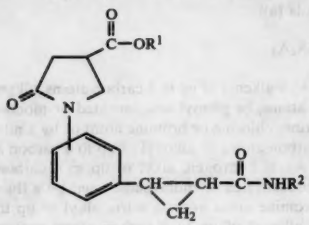
Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 182,162, Aug. 28, 1980, Pat. No. 4,296,120. This application May 18, 1981, Ser. No. 264,736

Int. Cl.³ A61K *31/40;* C07D *207/277*

U.S. Cl. 424—274 15 Claims

1. A carboxamide compound of the formula

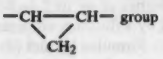


or a pharmaceutically-acceptable salt thereof;

wherein R^1 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbons and $—CH_2—CH_2—NR^3R^4$, wherein R^3 and R^4 are each alkyl having 1 to 3 carbons;

and R^2 is selected from the group consisting of alkyl having 8 to 15 carbons and cycloalkyl having from 6 to 12 carbons;

with the proviso that the two groups attached to the



group

have a trans relationship to each other.

4,343,814
HYPOCHOLESTEROLEMIC FERMENTATION PRODUCTS

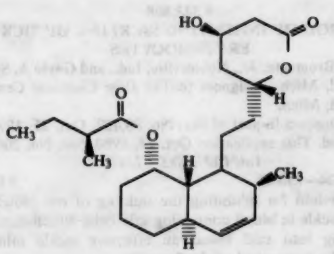
Vincent P. Gullo; Tony Y. K. Lam, both of Edison, and Richard L. Monaghan, Somerset, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 17, 1980, Ser. No. 207,508

Int. Cl.³ C07D *309/30;* A61K *31/365*

U.S. Cl. 424—279 2 Claims

1. A compound of structural formula I in substantially pure form:



I

4,343,815

METHOD FOR COMBATING FUNGI AND MITES USING CERTAIN TRIORGANOTIN COMPOUNDS

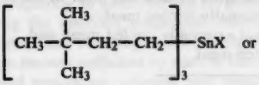
Melvin H. Gitlitz, Edison, N.J., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Continuation of Ser. No. 392,960, Aug. 30, 1973, abandoned. This application Feb. 27, 1978, Ser. No. 881,248

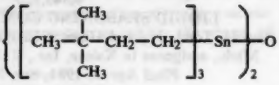
Int. Cl.³ A01N 55/04

U.S. Cl. 424—288 1 Claim

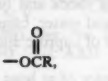
1. A non-phytotoxic composition for combating mites, said composition comprising a liquid or solid carrier and a miticidally effective amount of a compound of the general formula



or



wherein X represents a radical selected from the group consisting of chlorine, bromine, fluorine, hydroxyl and carboxylate



wherein R represents an alkyl radical containing from 1 to 12 carbon atoms.

4,343,816

PHARMACEUTICAL COMPOSITION COMPRISING AN ACYL-CARNITINE, FOR TREATING PERIPHERAL VASCULAR DISEASES

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

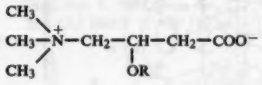
Filed Feb. 5, 1980, Ser. No. 118,835

Claims priority, application Italy, Feb. 12, 1979, 47976 A/79

Int. Cl.³ A61K 31/205

U.S. Cl. 424—316 6 Claims

1. Therapeutical method for the treatment of peripheral vascular diseases characterized by the fact of administering to a patient affected by chronic arterial occlusions of the extremities, functional arterial diseases and ischaemias an effective amount as to achieve in said patient an anti-ischaemic effect of an acyl-derivative of carnitine representable by the formula



(1)

where R is an acyl radical of fatty acid having 2 to 20 carbon atoms, or a pharmacologically acceptable salt thereof.

4,343,817

NATURAL CHEESE ANALOG

Arthur M. Swanson, 308 Kensington Dr., Madison, Wis. 53704; Robert J. Swanson, Sun Prairie, Wis.; James K. Seibel, Deerfield, Wis., and Frank L. Pavelec, Beloit, Wis., assignors to Arthur M. Swanson, Madison and ChemVen, Inc., Sun Prairie, both of, Wis.

Filed Feb. 24, 1978, Ser. No. 881,001

Int. Cl.³ A23C 19/02, 11/00

U.S. Cl. 426—36 16 Claims

10. A method of producing a coagulated curd comprising the steps of:

(a) introducing a quantity of dry material consisting essentially of casein into a quantity of liquid cheese whey, and adding during or after the addition of said material calcium hydroxide in an amount sufficient to raise and maintain the pH of the resultant casein and whey mixture to between 6.8 and 7.3 whereby the casein is dissolved in the whey;

(b) acidifying the casein and whey mixture;

(c) adding a coagulating enzyme to the mixture and holding the mixture under conditions to produce a continuous coagulum; and

(d) processing the coagulum by (i) cutting the continuous coagulum to form small curd particles, (ii) heating the curds to draw out whey from the curds, and (iii) drawing off the whey to separate the curds and whey.

4,343,818

COCOA PRODUCT AND PROCESS OF PREPARATION

Ingmar B. Eggen, New Milford, Conn., assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Continuation of Ser. No. 933,967, Aug. 15, 1978, abandoned. This application Apr. 21, 1980, Ser. No. 142,123

Int. Cl.³ A23G 1/02

U.S. Cl. 426—45 12 Claims

1. A process for making a cocoa product which consists essentially of:

(a) mixing a low fat cocoa, obtained from roasted cocoa beans, with water to form a cocoa slurry;

(b) enzymatically hydrolysing the cocoa slurry with an amylase-containing enzyme;

(c) adding alkali to the resulting hydrolysed slurry; and

(d) heating the alkali containing slurry.

4,343,819

QUICK-DISSOLVING POWDERED DRINK AND METHOD THEREFORE

Robert W. Wood, West Milford, N.J.; Andrew C. Hoefler, Warwick, and Deborah S. Brody, Kew Gardens Hills, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,280

Int. Cl.³ A23L 2/38, 2/40

U.S. Cl. 426—96 10 Claims

1. A quick-dissolving, sugar-containing powdered drink mix comprised of at least 60% by weight sucrose, an edible acidulent and a dry, particulate CO_2-generator, wherein the CO_2-generator has an average particle size less than one-half that of the sucrose particles and is bound to the surface of the sucrose particles by means of a non-aqueous binding agent selected from the group consisting of polyhydric alcohols, vegetable oils, fluid monoglycerides, fluid diglycerides and combinations thereof and wherein the amount of CO_2-generator is insufficient and to produce a carbonated beverage, and is in the range of 1% and less than 6% by weight of the sugar.

4,343,820

FREE-FLOWING, SWEETENED, HYDRATED, COCONUT PARTICLES AND METHOD FOR PREPARING SAME

Arnold S. Roseman, Glen Ellyn, Ill., assignor to CFS Continental, Inc., Chicago, Ill.

Filed Sep. 4, 1981, Ser. No. 299,305

Int. Cl.³ A23L 1/36

U.S. Cl. 426—103 25 Claims

7. A method of preparing a particulate free-flowing, sweetened, hydrated, coconut product comprising the steps of:

providing desiccated coconut particles;

admixing an aqueous solution containing water, an edible polyol having about 3 to about 6 carbon atoms and sodium chloride with said coconut particles and agitating said admixture to form hydrated coconut particles, said water

comprising about 10 to about 50 percent of the weight of said desiccated coconut;

admixing with agitation a sweetener at about 20 to about 120 percent of the weight of said desiccated coconut with said hydrated coconut particles and continuing the agitation for a time period sufficient to form a sweetened, hydrated, particulate coconut admixture; and

admixing and agitating cellulose powder at about 1.5 to about 8 percent of the weight of said desiccated coconut with the sweetened coconut admixture to prepare said product.

4,343,821

PROCESS FOR PREPARING MEAT PRODUCTS HAVING REDUCED SHRINKAGE

Peter W. Rose, R.R. 3 Covered Bridge Rd., South Barrington, Ill. 60010

Continuation-in-part of Ser. No. 165,850, Jul. 7, 1980, Pat. No. 4,276,313, which is a continuation-in-part of Ser. No. 139,795, Apr. 14, 1980, Pat. No. 4,264,632, which is a continuation-in-part of Ser. No. 129,727, Mar. 12, 1980, Pat. No. 4,264,631. This application Aug. 28, 1980, Ser. No. 182,329

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ A23B *4/02*; A23L *3/32*

U.S. Cl. 426—247 **55 Claims**

1. A process for preparing a meat product with reduced shrinkage comprising the steps of:

providing meat;

providing an aqueous solution containing an edible chloride salt present at a concentration of at least about 0.2 molal;

passing a direct electric current through said aqueous solution to form an electrolyzed moisturizing solution having moisturizing activity, said current passing through said aqueous solution at about 2 to about 20 amperes;

cooling said electrolyzed moisturizing solution to a temperature of no higher than about 30° F., after passage of said direct electric current through said electrolyzed moisturizing solution has ceased, while maintaining said moisturizing activity to form an electrolyzed moisturizing composition;

thereafter combining said meat and said electrolyzed moisturizing composition to contact said meat with said electrolyzed moisturizing composition to form an admixture;

maintaining said contact for a time period sufficient for said electrolyzed moisturizing composition to penetrate said meat and enhance the moistuure content thereof to form moisturized meat; and

recovering said moisturized meat.

4,343,822

PROCESS FOR PREPARING COOKED MEAT PRODUCTS HAVING REDUCED SHRINKAGE AFTER REFRIGERATION

Peter W. Rose, R.R. 3 Covered Bridge Rd., South Barrington, Ill. 60010

Continuation-in-part of Ser. No. 182,329, Aug. 28, 1980, which is a continuation-in-part of Ser. No. 165,850, Jul. 7, 1980, Pat. No. 4,276,313, which is a continuation-in-part of Ser. No. 139,795, Apr. 14, 1980, Pat. No. 4,264,632, which is a continuation-in-part of Ser. No. 129,727, Mar. 12, 1980, Pat. No. 4,264,631. This application Mar. 19, 1981, Ser. No. 245,636

The portion of the term of this patent subsequent to Apr. 28, 1998, has been disclaimed.

Int. Cl.³ A23B *4/02*; A23L *3/32*

U.S. Cl. 426—247 **27 Claims**

1. A process for preparing a cooked meat product having reduced shrinkage after refrigeration comprising the steps of:

providing hot meat;

providing an aqueous solution containing an edible chloride salt present at a concentration of at least about 0.5 percent by weight;

passing a direct electric current through said aqueous solution to form an electrolyzed moisturizing solution having moisturizing activity, said current passing therethrough at about 2 to about 20 amperes;

cooling said electrolyzed moisturizing solution to a temperature of no higher than about 30° F., after passage of said direct electric current through said electrolyzed moisturizing solution has ceased, while maintaining said moisturizing activity, to form an electrolyzed moisturizing composition;

combining said hot meat and said electrolyzed moisturizing composition to contact said meat with said electrolyzed moisturizing composition, while maintaining said moisturizing activity, to form an admixture;

maintaining said contact for a time period sufficient to lower the external meat temperature of said hot meat to about 70°–110° F. to form externally cooled meat;

thereafter refrigerating said externally cooled meat; and

recovering said refrigerated meat.

4,343,823

LIQUID SEASONING COMPOSITIONS IV

Paul H. Todd, Jr., and Howard E. Haley, both of Kalamazoo, Mich., assignors to Kalsec, Inc., Kalamazoo, Mich.

Filed Apr. 3, 1981, Ser. No. 250,721

Int. Cl.³ A23L *1/226*

U.S. Cl. 426—250 **19 Claims**

1. A homogeneous liquid condimental composition, useful in flavoring or coloring foods and beverages and which is dispersible in both oil and water, consisting essentially of

(1) monoglyceride of caproic and/or caprylic and/or lauric acid,

(2) polyglycerol ester of at least one fatty acid, and

(3) one or more condiments selected from edible flavorings and edible colorings,

the ratio by weight of (1) plus (2) to (3) being at least 1:4.

4,343,824

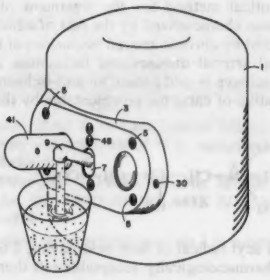
METHOD FOR CARBONATING LIQUIDS IN SITU

Michael C. Caldwell, 352 N. Caswell Rd., Charlotte, N.C. 28204

Division of Ser. No. 7,438, Jan. 29, 1979, Pat. No. 4,222,972. This application Sep. 12, 1980, Ser. No. 186,639

Int. Cl.³ A23L *2/40*

U.S. Cl. 426—477 **2 Claims**



1. A method of carbonating liquid comprising the steps of:

(a) providing a container

(b) providing an air bag of resilient impervious material within the container and defining a carbonating chamber exteriorly of the air bag within the container,

(c) introducing liquid into the carbonating chamber,

(d) introducing carbon dioxide into the carbonating chamber to carbonate said liquid,

(e) introducing atmospheric air into the air bag to exert a predetermined pressure against liquid in the carbonating chamber, and

(f) introducing air into the air bag to maintain the predetermined pressure against liquid in the carbonating chamber.

4,343,825

PROCESS FOR THE PREPARATION OF AN AEROSOL TYPE WHIPPING CREAM

Moritaka Takada, Yokohama, and Hiroshi Kanda, Zushi, both of Japan, assignors to Nisshin Oil Mills Ltd., Tokyo, Japan

Filed Sep. 15, 1980, Ser. No. 187,035
Claims priority, application Japan, Sep. 14, 1979, 54-117407
Int. Cl.[3] A23L *1/19;* B65D *85/72, 83/14*
U.S. Cl. 426—570 2 Claims

1. A process for the preparation of an aerosol type whipping cream which comprises homogenizing an aqueous phase containing a partially enzymolyzed soybean protein of 1–6% by weight based on the composition of cream with an oil phase containing an edible oil and fat and an edible emulsifier, charging the resulting emulsified composition to an aerosol container and charging under pressure a gas consisting of CO_2 in an amount sufficient by itself to function as the whipping agent and propellant, wherein said partially enzymolyzed soybean protein has such a hydrolysis degree that a weight ratio of protein dissolving in a 10% aqueous solution of trichloroacetic acid to the total of soybean protein is within the range of 20–90%.

4,343,826

PROCESS FOR PREPARING BEADS OF FAT

John P. McNaught, Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 9, 1981, Ser. No. 232,499
Int. Cl.[3] A23D *5/02;* A23L *1/00*
U.S. Cl. 426—601 8 Claims

1. A non-spray process for preparing solidified beads of fat comprising:

(a) melting a fat which contains at least 20% solids at room temperature at a temperature below about 175° F.;

(b) cooling the melted fat to a temperature about 3°–8° F. below the clear point of the fat;

(c) allowing the formation of an amount of solids sufficient to permit the fat to hold its shape when formed into drops at least 3 mm in diameter at the temperature described in step (b);

(d) forming the melted fat containing the solids into drops having a diameter of at least 3 mm; and

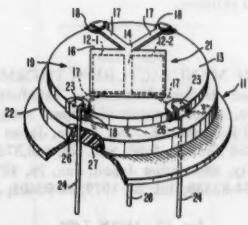
(e) cooling and collecting the solidified drops.

4,343,827

METHOD OF FINE-TUNING A MONOLITHIC CRYSTAL FILTER

Edwin C. Thompson, West Epping, N.H., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 8, 1981, Ser. No. 223,528
Int. Cl.[3] H01P *11/00;* H03H *3/02*
U.S. Cl. 427—8 5 Claims



1. A method of fine-tuning a monolithic crystal filter having a solid electrode on one side of a crystal wafer and a pair of split electrodes on an opposite side of the wafer, to define a pair of resonators, which comprises the steps of

plating additional electrode material on a selected portion of the solid electrode to balance open circuit resonant frequencies of the resonators of the filter; and

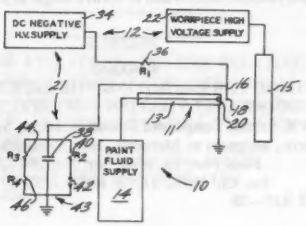
plating additional electrode material on substantially the entire solid electrode to adjust the filter to a desired mid-band frequency.

4,343,828

ELECTRODYNAMIC PAINTING SYSTEM AND METHOD

Robert G. Smead, St. Charles; Thomas J. Richards, and Charles E. Lanchantin, Jr., both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01740, § 371 Date Dec. 24, 1980, § 102(e) Date Dec. 24, 1980 PCT Pub. No. WO 82/02/54, PCT date Jul. 8, 1982
PCT Filed Dec. 24, 1980, Ser. No. 273,888
Int. Cl.[3] B05D *1/04*
U.S. Cl. 427—27 29 Claims



1. In an electrodynamic coating apparatus (10) for coating a workpiece (15) with a coating material, said apparatus (10) having first means (13) for propelling a plurality of atomized particles of said coating material through space in a preselected spray pattern (26), said first means (13) having a gun body (30) and a nozzle (24) connected to the gun body (30), the improvement comprising:

a second means (16,34) including an electrically chargeable electrode (16) for establishing an electric field intermediate the nozzle (24) and the electrode (16) for imparting an initial electrical charge of one polarity to the plurality of atomized particles at the nozzle (24), and for establishing, in response to the electrode (16) being charged to a sufficiently great first level, a zone of ions of an opposite polarity to said one polarity in the pathway of at least a portion of the preselected spray pattern (26), said zone of ions being adapted to neutralize and reverse the polarity of a portion of the charged particles yielding a plurality of diversely charged particles; and,

third means (21) for continuously varying the charge applied to said electrode (16) over a range that includes said first level and a second level of a magnitude insufficient for maintaining said zone of ions.

13. A method for coating a workpiece (15) with a coating material, comprising the steps of:

establishing a cyclically varying first electric field proximate a spary nozzle (24), said spray nozzle (24) being adapted to accept a surface charge, said surface charge being of a strength and polarity dependent upon said electric field;

spraying said coating material from said nozzle (24) toward said workpiece (15); and

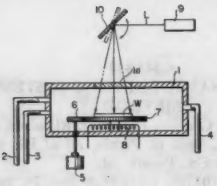
creating a periodic corona in the path of at least a portion of said coating material.

4,343,829

METHOD OF FABRICATING SINGLE-CRYSTALLINE SILICON FILMS

Hiroo Tochikubo, Tokyo, and Akira Kanai, Hachiohji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,561
Claims priority, application Japan, Apr. 4, 1980, 55-43577
Int. Cl.³ B05D 3/06; H01L 21/203, 21/263, 21/268
U.S. Cl. 427—35 7 Claims



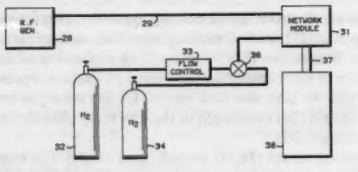
1. A method of fabricating a single-crystalline silicon film comprising depositing a material of polycrystalline silicon on a substrate; and, at the same time as said material is deposited, irradiating said deposited material of polycrystalline silicon with a laser or electron beam to single-crystallize said material of polycrystalline silicon and to form a single crystalline silicon film.

4,343,830

METHOD FOR IMPROVING THE EFFICIENCY OF SOLAR CELLS HAVING IMPERFECTIONS

Kalluri R. Sarma, Tempe, and Ronald N. Legge, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 13, 1980, Ser. No. 206,422
Int. Cl.³ H01L 31/18; B05D 1/38, 5/12
U.S. Cl. 427—38 16 Claims



1. A method for minimizing deleterious effects of structural imperfections in polycrystalline silicon solar cells, comprising:

diffusing a junction on a polycrystalline silicon substrate to form a p-n junction; passivating the p-n junction in a high pressure hydrogen plasma; applying an anti-reflection coating to the diffused portion of the p-n junction; defining a metallization pattern on the anti-reflection coating; and forming a metal conductor in the metallization pattern.

4,343,831

PROCESS FOR PRODUCING MAGNETIC RECORDING MEDIUM

Nobuo Tsuji; Goro Akashi; Masaaki Fujiyama, and Yasuyuki Yamada, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 13, 1981, Ser. No. 243,666
Claims priority, application Japan, Mar. 13, 1980, 55/32085
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 9 Claims

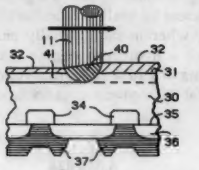
1. A process for producing a magnetic recording medium comprising applying to a support a coating solution containing ferromagnetic particles dispersed in a solution including a binder curable by electron beam radiation and a lowboiling point solvent, irradiating the support with electron beam radiation while the particles remain dispersed uniformally prior to any substantial evaporation of the solvent, and then evaporating the solvent to dryness.

4,343,832

SEMICONDUCTOR DEVICES BY LASER ENHANCED DIFFUSION

James N. Smith, Tempe, and Arthur D. Thompson, III, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1980, Ser. No. 193,235
Int. Cl.³ B05D 3/06
U.S. Cl. 427—53.1 11 Claims



1. A process utilizing a laser beam of wavelength λ for doping a region of area A and depth d, wherein d is measured perpendicular to A, in a semiconductor body while the average temperature T of said semiconductor body during doping remains within a small range $T-T_A$ of initial ambient temperature T_A of said semiconductor body, comprising the steps of:

forming a dopant source of thickness t on said semiconductor body, wherein $t \leqq d$ and said dopant source and semiconductor body form a combination;

choosing said wavelength λ so that at said ambient temperature T_A, more than 90% of the energy of said laser beam is absorbed within said combination in a depth $D \leqq n(t+d)$ where $n \leqq 10$, and D is measured perpendicular to A from an exterior surface of said dopant source means;

placing said combination in a path of said laser beam;

energizing said laser beam to an energy density Q which exceeds a melting threshold Q_m but is less than a boiling threshold Q_B so as to melt a small local surface region of said combination substantially immediately beneath a spot within area A where said laser beam impinges on said combination so that the depth of melting in said semiconductor body corresponds substantially to d;

moving said combination and said laser beam relative to each other so that other small local surface regions newly illuminated by said laser beam are successively melted, and local surface regions no longer illuminated successively refreeze;

continuing until substantially the entire area A has been melted and refrozen.

4,343,833

METHOD OF MANUFACTURING THERMAL HEAD

Tetsunori Sawae; Hiromi Yamashita; Takafumi Endo, and Toshio Tobita, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,572
Claims priority, application Japan, Jun. 26, 1979, 54-82337; Jun. 26, 1979, 54-82338; Jul. 20, 1979, 54-93605; Jul. 20, 1979, 54-93606
Int. Cl.³ H05K 3/06
U.S. Cl. 427—96 4 Claims

1. A method of manufacturing a thermal head, comprising the steps of:

attaching a plurality of electrically conductive strips on a surface of an electrically insulating substrate;

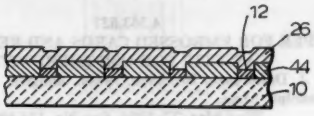
providing viscous organic coating on a supporting film and

forming at least one opening of predetermined shape in said coating;

applying said viscous organic coating having said opening to said surface of the substrate which has attached thereon said electrically conductive strips with said opening over at least part of said strips, and removing said supporting film and leaving said viscous organic coating on said substrate;

filling said opening with a thick film paste material including an electrically resistive material;

heating said viscous organic coating and said thick film paste material, thereby burning and removing said viscous organic coating and sintering and converting said thick film paste material into a resistive heater;



forming at least one second opening in a second viscous organic coating disposed on a second supporting film, said second opening having a form corresponding to said opening in the first organic coating;

applying said second viscous organic coating having said second opening to said surface of the substrate so that said second opening registers with said resistive heater, and removing said second supporting film and leaving said viscous organic coating on said resistive heater;

filling said second opening with a second thick film paste material including an electrically resistive material; and

heating said second viscous organic coating and said second thick film paste material, thereby burning and removing said viscous organic coating and sintering and converting said second thick film paste material into a second resistive heater superposed on the first resistive heater.

4,343,834

PROCESS FOR PREPARING MAGNETIC RECORDING MEDIUM

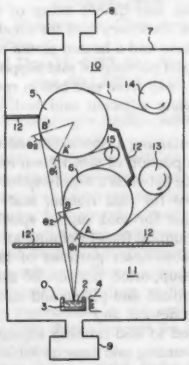
Seitoku Saito; Toshiaki Izumi; Hiroshi Sugihara; Takayoshi Kobuke, and Kazuo Takada, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1981, Ser. No. 247,753

Claims priority, application Japan, May 26, 1980, 55/68885

Int. Cl.³ B05D 5/12

U.S. Cl. 427—132 **1 Claim**



1. A process for preparing a magnetic recording medium by a tilt vapor deposition of magnetic particles on a substrate, said process comprising:

positioning a source of magnetic particle vapor within an evacuated housing;

positioning a first cylindrical can in said housing such that the circumferential surface of said can is in opposed relationship to said source;

positioning a partition having an aperture between said source and said first can;

locating said aperture such that lines extending from said source intersect said circumferential surface of said first can along an arc so as to form acute angles with a normal to the point of said intersection, said angles formed by said arc consisting of the angles between 60 and 85 degrees;

positioning a second cylindrical can in said housing such that the circumferential surface of said second can is in opposed relationship to said source;

locating said second can on the side of said first can opposite said source such that lines extending from said source are limited by said partition and said first can to intersect said circumferential surface of said second can along an arc so as to form acute angles to a normal to the point of intersection, said angles formed by said arc consisting of the angles between 60 and 85 degrees; and

heating said source such that vapors from said source intersect said first and second cans at said acute angles.

4,343,835

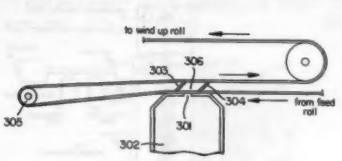
METHOD AND APPARATUS FOR TREATING OPEN-WEAVE SUBSTRATES WITH FOAM

Allen P. Jones, Charleston, and Charles J. Cunningham, Elkview, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 17, 1980, Ser. No. 217,437

Int. Cl.³ B05D 1/26; B05C 3/152

U.S. Cl. 427—209 **6 Claims**



1. In an apparatus for the treatment of an open-weave substrate with a foam, which apparatus comprises means for conveying said open-weave substrate, foam generating means, foam conduit means, foam applicator means, and orifice means in the top of said foam applicator means to provide exit of the foam for contact thereof with said open-weave substrate as the open-weave substrate travels across said orifice; the improvement of having situated above said orifice means an auxiliary component means, said auxiliary component means comprising two or more angled shear strips to shear said foam spaced apart from each other and enclosed at each end by end means, said shear strips straddling said orifice and together with said end means defining a chamber spaced above said orifice having open top and bottom sides for sequential contact of both sides of said open-weave substrate with the foam as said open-weave substrate travels across said orifice and both open top and bottom sides of said chamber of said auxiliary component means; said angled shear strips positioned (a) essentially parallel with the length of said orifice and at an angle of from 3° to 90° to the plane of the top of said foam applicator means and (b) defining a space between said angled shear strips and the surface of said foam applicator means to permit passage of the open-weave substrate therebetween.

5. A method for treating an open-weave substrate with foam delivered through the orifice of foam applicator means by continuously conveying said substrate between the orifice of the foam applicator means and an auxiliary component means

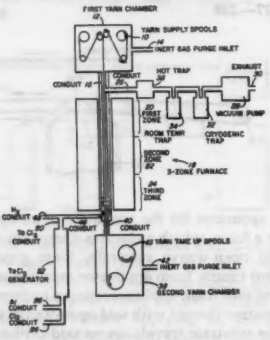
having angled shear strips to shear said foam so as to essentially uniformly apply the foam composition to both sides of said substrate, which method comprises conveying said substrate between the orifice and the edges of the angled shear strips of the auxiliary component meas closest to the orifice to uniformly apply foam to the side of the substrate facing the orifice and then conveying the opposite side of said substrate across the opposite edges of the angled shear strips of the auxiliary component means to uniformly apply foam to said opposite side of the substrate, said auxiliary component means comprising two or more of said angled shear strips essentially parallel to each other and enclosed at each end by end means, said shear strips straddling said orifice and together with said end means defining a chamber above said orifice having open too and bottom sides, whereby there is achieved sequential contact of both sides of said open-weave substrate with the foam as said open-weave substrate travels across said orifice and both open sides of said chamber of said auxiliary component means; said angled shear strips (a) defining an angle of from 3° to 90° with the plane of the substrate and positioned essentially parallel with the length of said orifice and (b) defining a space between said angled shear strips and the surface of said foam applicator means to permit passage of the open-weave substrate therebetween.

4,343,836

ONE-DIRECTIONAL UNIFORMLY COATED FIBERS, METHOD OF PREPARATION, AND USES THEREFOR

Lawrence R. Newkirk, Los Alamos; Flavio Valencia, Santa Fe; Robert E. Riley, and Terry C. Wallace, Sr., both of Los Alamos, all of N. Mex., assignors to United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1979, Ser. No. 61,152
Int. Cl.³ C23C *11/08*
U.S. Cl. 427—249 **12 Claims**



1. A method of coating long lengths of at least one multifilamentary yarn with a first metal selected from the group consisting of tantalum, niobium, tungsten, molybdenum, and rhenium, said multifilamentary yarn being made up of a bundle of individual filaments and being made of a material selected from the group consisting of graphite, carbon, ceramics, and metals, so as to produce yarn which is substantially uniformly coated on all filaments throughout each yarn bundle, said method comprising:

(a) passing said at least one multifilamentary yarn continuously through a coating chamber into which a mixture of a gaseous halide of said first metal and H_2 gas is being continuously introduced and then passed along a line which is substantially parallel to said yarn, said coating chamber being heated to a chosen temperature which is sufficiently high to enable said halide of said first metal and said hydrogen to react to form said first metal, said chosen temperature being lower than about 1100° C. and said coating chamber being operated at a total pressure within the range from about 1 to about 300 torr,

(b) allowing said gaseous halide of said first metal and said H_2 gas to react at said chosen temperature to form said first metal at the surfaces of said yarn filaments, thus producing at least first metal-coated fibers and an acid halide gas,

(c) separating said first metal-coated fibers from said acid halide gas and from all reactants and other gaseous reaction products in said coating chamber by passing an inert gas purge over said first metal-coated fibers so as to minimize contact by back-diffusion of said first metal-coated fibers with said reactants, said acid halide gas and said other gaseous reaction products, and then

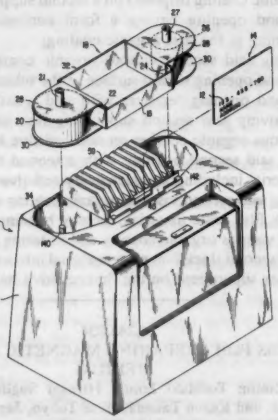
(d) allowing said first metal-coated fibers to cool.

4,343,837

TIPPER FOR EMBOSSED CARDS AND REMOVABLE CASSETTE FOR USE THEREWITH

Dana J. DeLorenzo, Brockton, Mass., assignor to DBS, Inc., Randolph, Mass.

Filed Mar. 27, 1980, Ser. No. 134,499
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—275 **18 Claims**



1. An improvement in a device for tipping the relief faces on an embossed printing plate, such as a credit card, with pigmented material, said device being of the type having a frame supporting a stationary bed for receiving said printing plate adjacent thereto and a heated platen reciprocally driven between spaced-apart portions of said support frame through a cycle toward and away from said bed in response to insertion of said printing plate adjacent said bed, said improvement comprising:

(a) a cassette containing a ribbon treated with said pigmented material, a portion of said ribbon extending an unsupported distance between a supply spool of said ribbon and a takeup spool for said ribbon, said cassette having a mounting frame for said supply spool and said takeup spool, said mounting frame defining an opening for straddling said spaced apart portions of said support frame when said unsupported portion of said ribbon is positioned intermediate said platen and said bed to provide a more compact device, and

(b) means secured to said housing adjacent said platen for removably mounting said cassette such that upon engagement of said treated ribbon with said relief faces of said printing plate by movement of said heated platen, said pigmented material is transferred to said relief faces.

4,343,838

PREPARATION OF A SURFACE FOR ADHESIVE BONDING

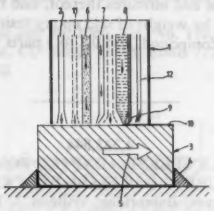
Francis S. Baker, Old Harlow, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Apr. 9, 1980, Ser. No. 138,797

Claims priority, application United Kingdom, Apr. 11, 1979, 7912865

Int. Cl.³ B05D 3/12

U.S. Cl. 427—292 6 Claims



1. A process for preparing a metal surface for adhesive bonding to a second surface having the steps of abrasion cleaning the metal surface by bombardment of the metal surface with particulate matter followed by removal of said particulate matter and then applying an adhesive to the cleaned metal surface, wherein the improvement comprises the continual purging of atmospheric gases from the metal surface by supplying a dry inert gas to said surface throughout said process.

6. An apparatus for preparing a metal surface for adhesive bonding to a second surface comprising ducted container means disposed adjacent the metal surface, means within said ducted container means for bombarding the metal surface with particulate material to clean said surface, means within said ducted container means for removing excess particulate material from said surface following said bombardment, adhesive applicator means within said ducted container means for applying a layer of adhesive to said cleaned surface, and means for injecting an inert gas into said container means to continually purge air from said container means and to effect the exclusion of atmospheric gases from the region adjacent said metal surface during the operations of said bombarding means, said removing means and said adhesive applicator means.

4,343,839

VAPOR PERMEATION CURABLE POLYESTER RESIN COATING COMPOSITIONS FOR FLEXIBLE SUBSTRATES

James R. Blegen, Worthington, Ohio, assignor to Ashland Oil, Inc., Dublin, Ohio

Filed Dec. 15, 1980, Ser. No. 216,323

Int. Cl.³ B05D 3/10

U.S. Cl. 427—340 16 Claims

1. A method for coating a flexible substrate with a coating composition which comprises:

(I) applying said coating composition to said flexible substrate, said coating composition having a pot life of at least about 4 hours in an open pot and comprising:

(A) an aromatic hydroxyl-functional condensation product having an acid number of less than about 10, having an aromatic hydroxyl-functionality of at least 2, and containing substantially no aliphatic hydroxyl groups, said condensation product made by condensing the following ingredients in the indicated molar proportions or double thereof except for the phenol-functional carboxylic acid:

(1) between about 3 and 8 moles of a mixture of diols which include a sterically hindered diol, and a diol or mono-epoxide which provides a pendant C_8–C_{22} hydrocarbyl group; and

(2) between about 3 and 6 moles of a mixture of a linear aliphatic dibasic acid and an ortho or meta aromatic dicarboxylic acid, and a phenol-functional carboxylic acid having at least one carbon atom between said phenol group and said carboxyl group;

(B) a multi-isocyanate cross-linking agent comprising a mixture of aromatic and aliphatic multi-isocyanates, wherein the ratio of aromatic hydroxyl equivalents from said condensation product to the isocyanate equivalents of said multi-isocyanate agent ranges from between about 1:1 and 1:1.7;

(C) a volatile organic solvent for said condensation product and for said multi-isocyanate; and

(D) a mar-resisting agent of an organic long chain fatty compound physically incompatible in said coating composition and having an effective chain length of at least 12 carbon atoms; and

(II) exposing said coated flexible substrate to a vaporous tertiary amine catalyst to rapidly cure said coating at about room temperature;

said cured coating having a film thickness of between about 0.1 and about 0.5 mils;

said cured film of said coating composition possessing a flexibility sufficient for a zero-T bend on metal and a mar resistance of at least about 2,000 grams as borne by the edge of a nickel passed over said cured film.

4,343,840

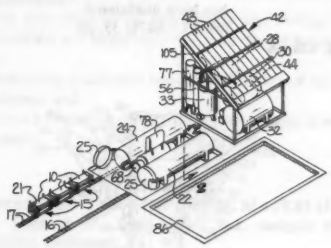
METHOD AND APPARATUS FOR TREATING CELLULOSIC PRODUCTS

Ben E. Edwards, Blowing Rock, and Clyde M. Marr, Greensboro, both of N.C., assignors to Old-North Manufacturing Company, Inc., Lenoir, N.C.

Filed Feb. 27, 1981, Ser. No. 238,835

Int. Cl.³ C23C 13/08; B05D 1/18, 3/12

U.S. Cl. 427—351 26 Claims



1. A method of treating sheets of relatively low density cellulosic fiberboard material with a preservative solution, or the like, and characterized by relatively low production costs, conservation of resources, and the substantial absence of the release of pollutants to the environment, and comprising the sequential steps of

placing the sheets to be treated in a treatment chamber,

flooding the treatment chamber with a treating solution comprising a preservative and solvent and so as to fully immerse the sheets,

removing the solution from the treatment chamber,

heating the treated sheets by injecting live steam into the treatment chamber, and then

drawing a partial vacuum within the treatment chamber and including withdrawing vapors therefrom, while condensing and separating any solvent and water vapor in the withdrawn vapors, to permit the separate reuse thereof, and then

removing the treated sheets from the treatment chamber.

4,343,841

NOVEL FLUOROELASTOMER FILM COMPOSITIONS CONTAINING PHENOXY RESINS AND METHOD FOR THE PREPARATION THEREOF

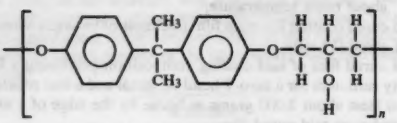
Donald Close, Stow, Ohio, assignor to David Hudson, Inc., Stow, Ohio

Filed Aug. 18, 1980, Ser. No. 178,789
Int. Cl.³ B05D 3/02; C08L 63/00
U.S. Cl. 427—386 14 Claims

1. A method for preparing fluoroelastomer film compositions comprising the steps of:

dissolving a fluoroelastomer gum selected from the group consisting of copolymers of vinylidene fluoride and hexafluoropropylene, and terpolymers of vinylidene fluoride, hexafluoropropylene and tetrafluoroethylene in a solvent; and

adding a phenoxy resin to said gum solution, having the general formula



where n is about 100; and

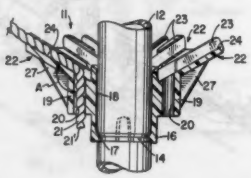
evaporating said solvent and baking the resulting film.

4,343,842

ARTIFICIAL CHRISTMAS TREE

Ascher Chase, Virginia Beach, Va., assignor to General Foam Plastics Corp., Norfolk, Va.

Continuation of Ser. No. 42,099, May 24, 1979, Pat. No. 4,248,916. This application Oct. 3, 1980, Ser. No. 193,745
The portion of the term of this patent subsequent to Feb. 3, 1998, has been disclaimed.
Int. Cl.³ A47G 33/06
U.S. Cl. 428—8 9 Claims



1. A branch holder for mounting groups of twisted wire branches of predetermined diameter and having inner ends bent at a predetermined angle, comprising:

(a) a unitary tubular sleeve;

(b) a plurality of bosses connected to outer surface portions of said sleeve and arranged substantially equidistantly thereabout;

(c) each of said bosses defining an elongated generally axial bore therein;

(d) integral cantilevered channel means extending outwardly and upwardly from each boss;

(e) the diameter of said bores and the width of said channel means being substantially that of the diameter of said twisted wire and being adapted to receive and to support said inner bent ends of said branches;

(f) said bores and said channel means intersecting at said predetermined angle to provide angularly related branch support surfaces.

4,343,843

FIBER REINFORCED EPOXY RESIN ARTICLE

Junior L. Johnson, Mabelvale, and Leonard E. Pikey, Benton, both of Ark., assignors to A. O. Smith-Inland, Inc., Milwaukee, Wis.

Filed Aug. 28, 1980, Ser. No. 181,970
Int. Cl.³ B65H 81/00
U.S. Cl. 428—36 10 Claims

1. A fiber reinforced epoxy resin article, comprising a cured epoxy resin system, and a plurality of fibers embedded in said resin system, said resin system being produced by reacting in the presence of a Lewis base, an epoxy resin with a compound which contains polyfunctional hydroxyl groups selected from the class consisting of phenolic hydroxyl groups, alcoholic hydroxyl groups and mixtures thereof, said resin system comprises 100 parts by weight of said epoxy resin, 2 to 15 parts by weight of said compound, and 0.1 to 5 parts by weight of said Lewis base.

4,343,844

SHRINKABLE SLEEVE ADAPTED FOR CABLE AND TUBING GAS FLOW BLOCKING

Richard S. Thayer, Bainbridge; William J. Herbert, Mantua, and Gary S. Klein, Bedford Heights, all of Ohio, assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 17, 1980, Ser. No. 207,851
Int. Cl.³ B32B 1/08; H02G 15/02
U.S. Cl. 428—36 17 Claims

1. A compact one-piece shrinkable unbranched sleeve made from a recoverable material having an elastic memory and having an outer wall extending along the entire length thereof and which, while in an expanded state, is able to be secured to the end of a bundle having one or more components extending from the end thereof to provide a barrier of minimal outside dimension to the flow of gas or vapors through the bundle, said sleeve in the expanded state having an opening disposed at one end thereof that is adapted to permit insertion of the end of the bundle into a cavity disposed within the sleeve communicating with the opening, said cavity enclosed by the outer wall of the sleeve and in said expanded state adapted to receive the end of the bundle and having a length thereof extending along the length of the sleeve that is sufficient to insure the securement of the sleeve to the bundle;

A plurality of channels disposed internally within the outer wall of the sleeve that extend along the length thereof between the cavity and the end of the sleeve opposite to the end into which the bundle is inserted, said channels having an opening at one end thereof communicating with the cavity and an opening at the opposite end, said channels surrounded by the outer wall of the sleeve and enclosed by inner walls of the sleeve that are integrally related directly or indirectly with the outer wall forming the remainder of the sleeve, said channels in the expanded state adapted to receive the components from the cavity in the combinations thereof desired and having sufficient length to permit the components to extend therethrough and emerge from the opening thereof at the opposite end; and

said sleeve dimensionally adapted such that when the sleeve is caused to shrink from the expanded state onto the end of

the bundle the outer wall of the sleeve surrounding the cavity is able to contract against the outer surface of the bundle to secure the engagement therebetween and the remainder of the outer wall of the sleeve surrounding the channels in combination with the inner walls enclosing the channels are able to constrict against the outer surface of the components contained therein to provide a barrier to the flow of gas or vapors through the bundle.

4,343,845

ELASTOMERIC STRIP AND METHOD OF MANUFACTURING SAME

Martin J. Burden, Fort Mill, S.C., and Richard C. Williams, Pittsford, N.Y., assignors to Schlegel Corporation, Rochester, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,485
Int. Cl.³ B32B *15/08*; E06B *7/22*
U.S. Cl. 428—122 **17 Claims**

1. A method of manufacturing an elastomeric strip of improved flexibility comprising the steps of:

reinforcing regions of longitudinally displaceable frame portions of a support frame with a degradable material to inhibit longitudinal displacement of the frame portions during the coating operation;

arranging the reinforced support frame in a position to be coated with elastomeric material;

coating the reinforced support frame with an elastomeric material to form an elastomeric strip without degrading the degradable material; and then

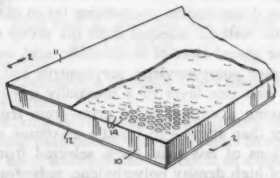
degrading selective regions of the degradable reinforcing material after the support frame is coated so that longitudinal displacement of the selected regions of the frame portions is no longer inhibited resulting in an elastomeric strip of improved flexibility and limited elongation or stretching.

4,343,846

BALSA-CORE SANDWICH LAMINATE

Henri A. Kohn, Northvale, N.J., assignor to Baltek Corporation, Northvale, N.J.

Filed May 12, 1980, Ser. No. 148,690
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—138 **1 Claim**



1. A structural sandwich laminate formed of thin facing sheets bonded to a core panel, said facings being constituted by aluminum sheets whose surfaces bonded to the core panel are etched whereby the surfaces are free of oxide film, said panel being formed of end-grain balsa having an array of closely spaced clear-through holes punched therein to define a reticulated balsa core of high strength and exceptionally low weight, said end grain balsa being composed of substantially parallel fibers which are at right angles to the faces of core panel whereby the holes punched therein have removed therefrom a phalanx of said fibers without disrupting the surrounding fibers and substantially degrading the strength of the panel, said array of holes being formed by alternative rows of equi-spaced holes in staggered relation, the holes having their centers at the apexes of a diamond, making possible a high concentration of holes with an adequate separation therebetween,

said aluminum sheets being bonded to said panel by a heat-curable exoxy resin which cures at a relatively high temperature causing volatilization of moisture, and said balsa panel has a moisture content of about 2 to 3% whereby vapors will not be produced to interfere with curing.

4,343,847

SEALING MEMBRANE WITH INCORPORATED LIMITED-SLIP SHEET AND ITS METHOD OF MANUFACTURE

Jean-Yves Meynard, Mondoubleau, France, assignor to Siplast S.A., Paris, France

Filed Nov. 14, 1980, Ser. No. 207,020
Claims priority, application France, Mar. 18, 1980, 80 05994
Int. Cl.³ B32B *3/10, 3/08*
U.S. Cl. 428—139 **18 Claims**

1. A sealing membrane intended for application to a support subject to cracking and having at least one carrier enveloped in a suitable adhesive, said sealing membrane being characterized in that

upon that face which is adapted to be in contact with the support subject to cracking, there is united an assembly comprising a film and a sheet of material which is not fusible or only slightly fusible and nontraversable by the hot adhesive,

said film and sheet being superposed and having aligned perforations and being such that they do not bond to each other,

said sheet being positioned toward the outside of the sealing membrane, and

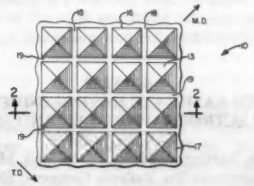
the adhesive extending through said perforations in both film and sheet.

4,343,848

EMBOSSED THERMOPLASTIC MATERIAL

Erving A. Leonard, Jr., Terre Haute, Ind., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 15, 1980, Ser. No. 216,127
Int. Cl.³ B32B *3/30, 3/28*
U.S. Cl. 428—156 **7 Claims**



1. An embossed length of thermoplastic film, said film having a plurality of rows of pyramid-shaped protuberances intersecting the longitudinal and transverse axis of said length of film at an angle of about 45 degrees, the rows of protuberances aligned with one each of said axes being separated by continuous flat valleys extending from one side of said film to the other side of said film.

4,343,849

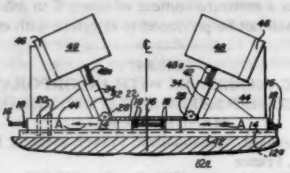
EDGE TREATMENT FOR FIBREBOARD PANELS AND THE LIKE

Roger F. Sutton, St. Charles; Robert O. Blomquist, Mt. Prospect, and Allan J. Luck, Marengo, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Division of Ser. No. 848,142, Nov. 3, 1977, Pat. No. 4,197,078. This application Mar. 15, 1979, Ser. No. 21,245

Int. Cl.³ B32B *3/02*

U.S. Cl. 428—157 **11 Claims**



1. A panel of compressed wood fibreboard having a plurality of profiled edge surfaces formed by:

cutting to mechanically pre-shape said edge surfaces of said blank to approximate a finished edge profile shape desired rendering said profiled edge surfaces porous and therein more liquid absorbant and less uniform liquid absorbant condition than in the prior un-cut condition;

elevating the surface temperature of said preshaped edge surfaces to a temperature of at least 500° F. to heat sear the fibres of substantially only said preshaped edge surfaces of said wood fibreboard; and

pressurizing said heat seared edge profile while at said elevated temperature to sufficient forming pressure for sealing together adjacent wood fibres of substantially only said preshaped edge surfaces into a permanent set of the desired edge profile, said profiled edge surfaces having a reduced liquid absorption and more uniform capacity for liquid absorption therein.

4,343,850

DECORATED LAMINATE HAVING INDICIA APPLIED PHOTOELECTROGRAPHICALLY AND METHOD OF MAKING SAME

Hal C. Kravig, Bartlett, and John T. Van Drie, Memphis, both of Tenn., assignors to The Vollrath Company, Sheboygan, Wis.

Filed Mar. 21, 1980, Ser. No. 132,614

Int. Cl.³ B32B *3/00, 23/08*

U.S. Cl. 428—203 **10 Claims**

5. A decorated, heat and pressure cured laminate, said laminate comprising before said cure,

(a) a core impregnated throughout with a thermosetting phenolic resin; and

(b) at least one sheet selected from paper having basis weights of about 20 to about 100 pounds, said paper bearing photoelectrographically indicia on at least one surface thereof applied by a film forming thermoplastic resin, said laminate being unitary after cure.

4,343,851

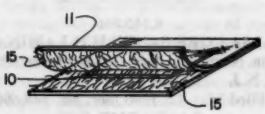
MULTI-PLY LAMINAE

Nicholas Sheptak, Appleton, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 14, 1980, Ser. No. 139,656

Int. Cl.³ B32B *7/02, 27/16*

U.S. Cl. 428—212 **10 Claims**



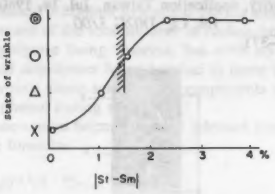
1. Multi-ply laminae characterized in defibrillation of a layer thereof upon delamination, comprising: (a) an outer layer of a thermoplastic material selected from the group consisting of polyethylene glycol ester of terephthalic acid, oriented polyamide, oriented polypropylene, acrylonitrile and polycarbonate; (b) at least one layer of a uniaxially oriented polymer material having a with-grain to cross-grain tensile strength ratio greater than about 4 to 1 and a maximum elongation in both directions of less than 150% selected from the group consisting of high density polyethylene, polypropylene, polyacrylonitrile, acrylonitrile-butadiene-styrene terpolymer and polyvinylchloride; (c) at least one heat sealant or heat bonding material effective to bond said uniaxially oriented film layer to said outer layer and (d) at least one heat sealant or heat bonding material effective to bond said uniaxially oriented film layer to a core comprising an information-bearing substrate, said laminae being heat bonded after uniaxial orientation so that said uniaxially oriented layer defibrillates upon delamination.

4,343,852

COMPOSITE FILM AND PACKAGING MATERIAL OF POLYPROPYLENE BASE AND SURFACE POLYMER COMPOSITION

Tsutomu Isaka; Kazuyoshi Ohashi, and Yukinobu Miyazaki, all of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka-fu, Japan

Filed Jul. 14, 1980, Ser. No. 167,736
Claims priority, application Japan, Jul. 13, 1979, 54-89579
Int. Cl.[3] B32B 7/02, 27/08
U.S. Cl. 428—216 33 Claims



1. A composite film comprising a base film and a surface film provided on at least one surface of the base film,

said composite film having the following shrinkage characteristics:

$SFm \geqq 3.5$

$SFt \geqq 3.5$

$|St-Sm| \geqq 1.5$

$SFt-St \geqq 1.15$

$SFm-Sm \geqq 1.15$

wherein SF is a heat shrinkage at 120° C. under a free state (%), S is a heat shrinkage at 120° C. under a restrained state (%), m indicates a machine direction and t indicates a transverse direction,

said base film being made of a resin composition comprising a propylene polymer, and

said surface film being made of a polymer composition comprising at least two of (A) a copolymer of propylene and ethylene in a weight proportion of 99.5:0.5 to 90:10, (B) a copolymer of propylene and an α-olefin having 4 to 10 carbon atoms in a weight proportion of 70:30 to 95:5 and (C) a copolymer of butene and any other α-olefin having 2 to 10 carbon atoms in a weight proportion of 70:30 to 99:1, each of the copolymers being in an amount of 10 to 90% by weight on the total weight of the copolymers.

4,343,853

ANTIMICROBIALLY TREATED FABRIC CONSTRUCTION

Willard L. Morrison, 1896 Meadowbrook Dr., Winston-Salem, N.C. 27104

Filed Mar. 6, 1980, Ser. No. 127,558
Int. Cl.[3] B32B 5/26
U.S. Cl. 428—233 6 Claims

1. A fabric construction including a face fabric and a backing fabric and wherein:

(a) said backing fabric being formed from a first synthetic yarn comprising fiber-forming polymers having an antimicrobial agent incorporated therein in an amount equalling at least 0.1% by weight of the polymer, said antimicrobial agent being characterized by its ability to be stored in the intermolecular structure of the polymer and to migrate to the surface;

(b) said face fabric being formed from a second yarn including untreated fibers only;

(c) said face fabric and said backing fabric being in plated relationship;

whereby said antimicrobial agent transfers to said second face to inhibit antimicrobial growth thereon.

4,343,854

FLAME RETARDANT COMPOSITION

David S. Moorman, Houston, Tex., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Mar. 12, 1981, Ser. No. 243,018
Int. Cl.[3] C09K 3/28
U.S. Cl. 428—290 10 Claims

1. A substantially non-aqueous liquid flame retardant composition consisting essentially of

(A) polybrominated diphenyloxide containing about 4 to 9 nuclearly substituted bromine atoms, and

(B) a C_{10-24} aliphatic hydrocarbon polybrominated and polychlorinated to contain about 10 to about 50 wt. % of bromine and about 5 to about 60 wt. % of chlorine;

the weight ratio of (A) to (B) ranging from about 5:1 to about 1:5.

4,343,855

TRANSFER FILM

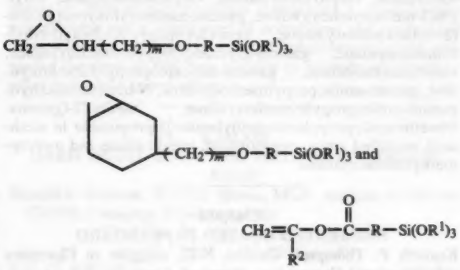
Terrence M. Conder, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 30, 1978, Ser. No. 956,081
Int. Cl.[3] C09J 7/02
U.S. Cl. 428—332 3 Claims

3. A transfer film sequentially comprising:

(1) a strippable layer

(2) an abrasion resistant film layer of from 3 to 25 microns in thickness comprising the reaction product of a monomer selected from the class consisting of



wherein

R is a divalent aliphatic nonhydrolyzable group of from 1 to 18 carbon atoms the backbone of which is composed of C, O, S, and N atoms with no adjacent heteroatoms and having terminal carbon atoms,

R^1 is an aliphatic group of 1 to 10 carbon atoms,

R^2 is H or CH_3, and

m is 1 to 6, and

(3) a thermoplastic coating which is chemically bonded to said abrasion resistant coating layer wherein said thermoplastic coating is a thermoplastic adhesive selected from polymers of the class consisting of vinyl resin, poly(2,5-oxolene), polyacrylate, and polyhydroxyether.

4,343,856

POLYMERIC MARKING FILM

Jagadish C. Goswami, New City, N.Y.; Whiteford D. Grimes, Weston, Conn., and Richard A. Rehder, Mahopac, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Mar. 9, 1981, Ser. No. 241,869
Int. Cl.[3] B32B 27/08, 27/30; C09J 7/02
U.S. Cl. 428—332 8 Claims

1. A polymeric marking film consisting essentially of:

(a) a film component containing an internally plasticized vinyl chloride copolymer resin; and

(b) a layer of pressure sensitive adhesive attached to one side of the film.

2. A marking film as claimed in claim 1 where the film component has a thickness of from about 50 to about 125 microns.

4,343,857

COATINGS FOR OPTICAL SYSTEMS

John Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Aug. 23, 1978, Ser. No. 936,320
Int. Cl.[3] B32B *27/08*; G02B *1/04, 1/10*; G02C *7/02*
U.S. Cl. 428—336 8 Claims

1. A hydrolytically stable, hard, transparent coating on an acrylic or polycarbonate optical member comprising an optical member having a coating of 1 to 10 microns thereon, said coating comprising a cured composition formed from a dispersion coating of a mixture by weight of 0 to about 30 parts of prehydrolyzed alkyl silicate, where said alkyl radical contains 1 to 10 carbon atoms, 0 to about 30 parts of polysilicic acid, 0 to about 50 parts of a monocarboxylic acid having 1 to 2 carbon atoms, 0 to about 50 parts of water, 1 to 5 parts of a silane, 0 to about 3 parts of a filler selected from the class consisting of fumed silica and alumina, in a binder system composed of epoxy resin and an acidified aminoethylated vinyl interpolymer having interpolymer pendant groups of carboxyloxy (polyalkylamine) wherein the number of alkylamine groups ranges from 1 to about 2.5 and the interpolymer has aminoethylation containing at least 3 percent by weight of pendant carboxylic groups, said aminoethyl groups being reacted with sufficient acid to impart water solubility to said interpolymer, said silane being selected from the class consisting of chloropropyltrimethoxysilane, vinyltrichlorosilane, vinyltriethoxysilane, vinyltris(2-methoxyethoxy)silane, gamma-methacryloxypropyl-tris-(2-methoxyethoxy)silane, beta-(3,4-epoxycyclohexyl)-ethyltrimethoxysilane, gamma-glycidoxypropyltrimethoxysilane, vinyltriacetoxysilane, gamma-mercaptopropyltrimethoxysilane, gamma-aminopropyltriethoxysilane, N-beta(aminoethyl)-gamma-aminopropyltrimethoxysilane, methyl[2-(gamma-trimethoxysilypropylamino)ethylamino]3-propionate in methanol, modified amino-organosilane, ureido-silane and mercaptoethyltriethoxysilane.

4,343,858

PIGMENTED COATED PAPERBOARD

Kenneth P. Thompson, Canton, N.C., assignor to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 255,099, Apr. 17, 1981, abandoned. This application Jul. 17, 1981, Ser. No. 284,391
Int. Cl.[3] B32B *5/16, 15/02, 15/20, 27/10*
U.S. Cl. 428—342 11 Claims

1. A pigmented coated paperboard comprising a paperboard substrate on which are coextruded a top film of polyethylene terephthalate and an intermediate layer of a polymer or copolymer of a lower alkyl (C_1 to C_4) ester of acrylic acid, methacrylic acid or ethacrylic acid that contains from about ½ to about 15 weight percent of pigment.

4,343,859

FIBERS OF IONIC POLYMERS

Robert D. Lundberg, Bridgewater, and Henry S. Makowski, Scotch Plains, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 17,543, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 855,730, Nov. 29, 1977, abandoned. This application Aug. 21, 1980, Ser. No. 179,997
Int. Cl.[3] D02G *3/00*
U.S. Cl. 428—364 8 Claims

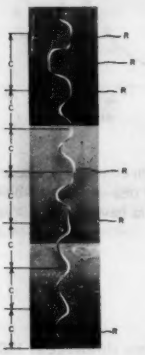
1. An elastomeric fiber having a tenacity of at least about 0.12 grams/denier, which consisting essentially of a sulfonated elastomeric Butyl Rubber or EPDM terpolymer having about 10 to about 50 meq. sulfonate groups per 100 grams of said sulfonated elastomeric polymer, said sulfonate groups being neutralized with an amine, ammonia, quanadine, or a metal counterion being selected from the group consisting of antimony, lead, aluminum, iron and Groups I-A, II-A, I-B and II-B of the Periodic Table of Elements and mixtures thereof, said fiber not containing any polyolefinic resin.

4,343,860

SELF-CRIMPING POLYAMIDE FIBERS

George A. Fernstrom; Harold H. Hebeler; Perry H. Lin, and Robert R. Moneymaker, all of Seaford, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 57,973, Jul. 16, 1979, Pat. No. 4,301,102. This application Jun. 15, 1981, Ser. No. 273,943
Claims priority, application Taiwan, Jul. 14, 1980, 6911913
Int. Cl.[3] D02G *3/00*
U.S. Cl. 428—371 14 Claims



1. A self-crimpable, monocomponent, nonbulbous, drawn fiber of polyhexamethylene adipamide or of polycaproamide, having a crystal perfection index of no greater than 70, a tenacity of at least 1.3 grams per denier and a break elongation of no greater than 120%, which upon being subjected to a relaxed heat treatment develops a substantially helical, frequently reversing crimp with at least 6 filament crimp index.

4,343,861

FLUOROELASTOMER/POLYEPICHLOROHYDRIN ELASTOMER ARTICLES

David A. Stivers, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 87,501, Oct. 23, 1979, Pat. No. 4,293,663. This application Jun. 8, 1981, Ser. No. 271,251
Int. Cl.[3] B32B *27/38, 27/00*
U.S. Cl. 428—413 10 Claims

1. A layered article, comprising:

(a) a first layer which is

(i) a laminated layer having a first sublayer of curable gum stock consisting essentially of fluoropolymer gum and curing components, and a second sublayer of curable gum stock consisting essentially of polyepichlorohydrin gum and curing components, or

(ii) a blended layer of curable gum stock comprising fluoropolymer gum, polyepichlorohydrin gum, and curing components; and

(b) one or more second layers each of which is a curable gum stock comprising

(i) fluoropolymer gum, polyepichlorohydrin gum, or a blend of fluoropolymer gum and polyepichlorohydrin gum, and

(ii) curing components;

each said second layer being the same as or different from said first layer and any other of said second layers; said fluoropolymer gum being a copolymer of (1) terminally ethylenically

unsaturated olefin which has 2 to 4 carbon atoms and can be homopolymerized by emulsion polymerization in the presence of a water soluble free radical catalyst such as $K_2S_2O_8$, and (2) at least one terminally unsaturated fluoromonoolefin, each of the doubly bonded chain carbon atoms of said fluoromonoolefin being bonded to at least one fluorine atom substituent and any remaining valence of any chain carbon atom of said fluoromonoolefin being satisfied by hydrogen, fluorine, chlorine, bromine, or a fluoralkyl or fluoroalkoxy radical of 1 to 4 carbon atoms, with at least 10 percent of the chain carbon atoms of said copolymer being $-CH_2-$ units, at least 10 percent of the chain carbon atoms of said copolymer being bonded to alkyl or alkoxy radicals with the proviso that only one such radical is bonded to a given carbon atom, and with at least 50 percent of the total number of carbon-bonded moieties in said copolymer being fluorine, but with no chain carbon atom of said copolymer being bonded to more than one chlorine or bromine atom; said curing components being

(1) polyphenol curing agent;

(2) organo-onium occuring agent selected from compounds of the formulas

$$(R^1)_4Q^{+1}(X^{-m})_{1/m}$$

$$(R^1)_3QR^2Q(R^1)_3^{+2}(X^{-m})_{2/m}$$

wherein Q is a nitrogen, arsenic or phosphorus atom; X is an anion of valence m; each R^1 is a monovalent organic radical containing 1 to 20 carbon atoms, is the same as or different from any other R^1, and can combine with another R^1 to form a cyclic structure containing a Q atom; and R^2 is a divalent organic radical containing 2 to 12 carbon atoms;

$$(R^3)_3S^{+1}(X^{-m})_{1/m}$$

or

$$(R^3)_2SR^4S(R^3)_2^{+2}(X^{-m})_{2/m}$$

wherein S is sulfur; X is an anion of valence m; each R^3 is a monovalent organic radical containing 1 to 20 carbon atoms, is the same as or different from any other R^3, and can combine with another R^3 to form a cyclic structure containing an S atom; R^4 is a divalent organic radical containing 2 to 12 carbon atoms; and at least one R^3 or R^4 group is aromatic; and

(3) an acid acceptor, the resulting layered article, when cured, having a layer-to-layer bond formed without the need for an adhesion promoting coating at the interface between contiguous layers or sublayers.

4,343,862

OPTICAL RECORDING ELEMENT AND A METHOD OF MANUFACTURING THE SAME

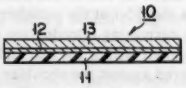
Nobuaki Yasuda, Zushi; Yoshinori Fujimori, Kawasaki, and Masaaki Morita, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 23, 1980, Ser. No. 171,288

Claims priority, application Japan, Aug. 1, 1979, 54/97196

Int. Cl.³ B32B *27/00, 15/08;* G01D *15/34*

U.S. Cl. 428—421 **3 Claims**



1. An optical recording element which comprises:

a heat-resistant organic resin substrate consisting of polyimide resins or fluorine-containing resins;

a recording layer formed on said substrate; and

a transparent organic resin protective layer mounted on said recording layer and consisting of fluorine-containing resins.

4,343,863

DRAG REDUCING SKI WAX

Rodney G. Lawrence, Howell, Mich., and Patrick T. Morelli, Denver, Colo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed May 27, 1980, Ser. No. 153,382

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—485 **18 Claims**

1. A ski wax containing effective amounts of microcrystalline and paraffin waxes as a wax base and a poly(alpha-olefin) in an amount which enhances the effective temperature-condition range of the particular base wax.

4,343,864

METHOD OF SEALING AN ITEM IN A COVERING COMPRISING A COMPOSITION OF A POLYETHYLENE AND ISOBUTYLENE COPOLYMER

Anthony J. Berejka, Huntington, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Division of Ser. No. 137,079, Apr. 3, 1980, Pat. No. 4,310,367, which is a division of Ser. No. 38,062, May 11, 1979, Pat. No. 4,264,490. This application Aug. 20, 1981, Ser. No. 294,698

Int. Cl.³ B29C *27/22;* B32B *31/26, 31/28*

U.S. Cl. 428—500 **4 Claims**

1. Articles formed by heat sealing or ultrasonic welding sheets or films of a composition comprising a cross-linkable polyethylene and a copolymer of isobutylene and conjugated diene wherein a sufficient quantity of isobutylene copolymer to render the sheet or film heat sealable or sealable onto itself or other polyolefin compositions.

4,343,865

HARD METAL BODY AND METHOD OF MAKING SAME

Donald E. Graham, St. Clair Shores, Mich., assignor to General Electric Company, Columbus, Ohio

Filed Jun. 24, 1981, Ser. No. 276,918

Int. Cl.³ B22F *7/02;* C23C *11/02*

U.S. Cl. 428—552 **8 Claims**

1. An article with improved bond strength comprising:

a substrate formed from a cemented sintered metal carbide material;

a bonding layer disposed over said substrate, said bonding layer being formed from boron; and

a wear resistant outer coating disposed over said bonding layer, said outer coating being formed from titanium boride.

4,343,866

DEEPLY EMBOSSED SHEET PRODUCT

Nathan Oser, Perrineville, and Edmund J. Niedzinski, Somerville, both of N.J., assignors to Manville Service Corporation, Denver, Colo.

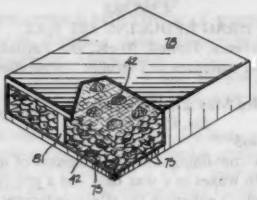
Division of Ser. No. 622,930, Oct. 16, 1975, abandoned, which is a continuation of Ser. No. 521,829, Nov. 7, 1974, abandoned. This application Oct. 26, 1976, Ser. No. 735,643

Int. Cl.³ B32B *15/01, 15/18*

U.S. Cl. 428—593 **9 Claims**

1. A sheet material having on the surface thereof a continuous small scale relief pattern of a plurality of hills and valleys extending in a plurality of directions across at least one of the surfaces of said sheet material, said hills and valleys extending in a plurality of directions across at least one of the surfaces of said sheet material, said hills and valleys extending outwardly from at least one of the surfaces of said sheet material not more than 1 cm, and also having on the surface thereof and superim-

posed on said continuous small scale relief pattern a deep embossment pattern, said deep embossment pattern consisting of a plurality of large spaced apart discrete protuberances, each of said protuberances being of a scale sufficiently large relative to the relief features of said small scale relief pattern to



encompass at least portions of several said hills and valleys, said large protuberances being present in a number sufficient to prevent adjacent sheets of said sheet material from touching except at the points of said protuberances when at least two sheets of said sheet material are stacked in vertical array.

4,343,867

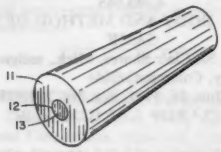
SUPERCONDUCTING WIRE WITH IMPROVED STRAIN CHARACTERISTICS

Thomas Luhman, Westhampton Beach; Carl J. Klamut, E. Patchogue; Masaki Suenaga, Bellport, and David Welch, Stony Brook, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Division of Ser. No. 105,439, Dec. 19, 1979, which is a continuation-in-part of Ser. No. 966,709, Dec. 5, 1978, abandoned. This application Jul. 20, 1981, Ser. No. 284,858

Int. Cl.³ B32B *15/01*

U.S. Cl. 428—614 **4 Claims**



1. A superconductor wire having improved resistance to loss of current-carrying capacity when subjected to strain, said superconductor wire comprising at least one filament of a material possessing superconducting properties, said filament being encased in a matrix consisting essentially of up to about 0.2 beryllium and gallium-copper alloy having a coefficient of thermal expansion greater than that of said filament, said matrix containing beryllium in an effective concentration sufficient to induce and maintain said filament under greater radial and axial compression than that provided by such matrix without the beryllium addition, said filament further comprising a film of vanadium-gallium providing said superconducting properties.

4,343,868

HYDROGEN ION-PRODUCING CELL AND TECHNIQUE FOR CONTROLLING THE PH OF BATTERY ELECTROLYTES

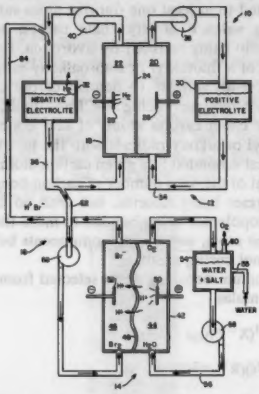
Ronald A. Putt, Palatine, Ill., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Dec. 31, 1980, Ser. No. 221,932

Int. Cl.³ H01M *8/06, 10/36*

U.S. Cl. 429—17 **8 Claims**

6. In a battery assembly of the type including a battery in which hydrogen ions are present in and lost from its electrolyte solution during operation, a method for replacing at least some of said lost ions, said method comprising the steps of providing a supply of hydrogen ions independent of those present in or



lost from said solution by electrochemically decomposing water in a cell separate from said battery to produce hydrogen gas, and introducing hydrogen ions in the form of said hydrogen gas from said supply into said electrolyte solution.

4,343,869

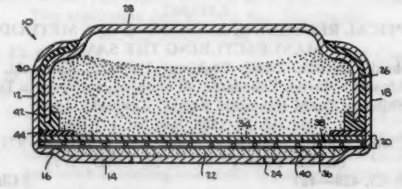
SEAL FOR METAL-AIR BATTERIES

John E. Oltman, Mt. Horeb, and Robert B. Dopp, Madison, both of Wis., assignors to Ray-O-Vac Corporation, Madison, Wis.

Filed Feb. 9, 1981, Ser. No. 233,074

Int. Cl.³ H01M *2/14*

U.S. Cl. 429—27 **6 Claims**



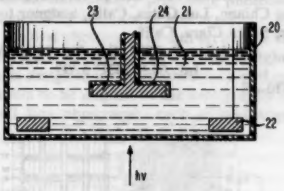
1. An improved metal-air button cell including a conductive metal can having a shoulder at the periphery of the bottom of the can, means for permitting introduction of oxygen into the cell, a cathode disposed within the can and a portion thereof supportedly registered against the shoulder of the can, a separator disposed above the cathode assembly, an anode disposed within the cell, a J-shaped grommet adhesively bonded to the inner surface of the can and a conductive cover sealingly inserted into the grommet, wherein the improvement comprises a thermoplastic annular ring sandwiched between the separator and the grommet.

4,343,870

SEMICONDUCTOR LIQUID JUNCTION PHOTOCELL HAVING A P-TYPE PHOTOACTIVE ELECTRODE

Adam Heller, Bridgewater; Hans J. Lewerenz, Maplewood, and Barry Miller, New Providence, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 8, 1980, Ser. No. 184,925
Int. Cl.³ H01M 6/36
U.S. Cl. 429—111 11 Claims



1. A photocell comprising a counterelectrode, a photovoltaic junction between a p-type semiconductor electrode, said p-type semiconductor being selected from the group consisting of InP and Si, and a liquid electrolyte, said electrolyte comprising a redox couple

characterized in that

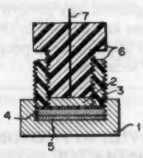
said redox couple is selected from the group consisting of V^{2+}/V^{3+} and Nb^{4+}/Nb^{5+} cations.

4,343,871

LIGHT WEIGHT BATTERY

Shinichi Tobishima; Junichi Yamaki, and Akihiko Yamaji, all of Mito, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Dec. 4, 1980, Ser. No. 213,042
Claims priority, application Japan, Dec. 18, 1979, 54-163621; Dec. 18, 1979, 54-163622; Dec. 18, 1979, 54-163623; Jan. 17, 1980, 55-3801; Feb. 25, 1980, 55-21575
Int. Cl.³ H01M 10/40
U.S. Cl. 429—197 15 Claims



1. A light weight battery which comprises:

an anode containing one metal selected from the Group Ia metals;

a cathode containing one compound selected from the group consisting of organic compounds having a π-electron conjugated system; and

an electrolyte which does not chemically react with the anode and cathode materials, and permits the migration of the ions of the anode material to the cathode for electrochemical reaction with the cathode-active material.

4,343,872

CALCIUM-STRONTIUM-LEAD GRID ALLOY FOR USE IN LEAD-ACID BATTERIES

John Nees, Wyomissing, and Dale A. Bailey, Hamburg, both of Pa., assignors to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 954,930, Oct. 26, 1978, which is a division of Ser. No. 802,182, May 31, 1977, Pat. No. 4,137,378.
This application Aug. 1, 1980, Ser. No. 174,768
Int. Cl.³ H01M 4/66
U.S. Cl. 429—245 3 Claims

1. A battery grid alloy for use in forming the battery grids of lead-acid storage batteries, consisting essentially of 0.01 to 0.09 wt-% calcium; 0.01 to 0.10 wt-% strontium; 0.1 to 1.0 wt-% tin; aluminum not to exceed 0.03 wt-%; with the remainder being lead.

4,343,873

PHOTOGRAPHIC LIGHT-SENSITIVE SILVER HALIDE ELEMENTS

Senzo Sasaoka, Minami-ashigara, Japan, assignor to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed Oct. 15, 1980, Ser. No. 197,358
Claims priority, application Japan, Oct. 15, 1979, 54-132538
Int. Cl.³ G03C 5/04, 1/76
U.S. Cl. 430—1 31 Claims

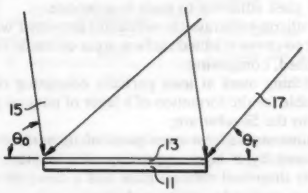
1. A laser-sensitive photographic light-sensitive silver halide element for use in the formation of a dot image by a photographic exposure using a laser light, comprising a support, at least one layer of a light-sensitive silver halide emulsion providing a gamma value of at least 10, and a light-scattering layer provided in such a manner that the light-sensitive silver halide emulsion layer is exposed to the laser light through the light-scattering layer, wherein the light-scattering layer contains substantially light-insensitive light-scattering particles capable of being dissolved and removed in a development step and the diameter of light-scattering particles is from 50% to 150% of the wavelength of the laser light for use for the exposure.

4,343,874

METHOD OF CONSTRUCTING A HOLOGRAM ON A PHOTORESIST DETECTOR

Kenneth A. Haines, San Jose, Calif., assignor to Eidetic Images, Inc., Santa Clara, Calif.

Filed Nov. 19, 1980, Ser. No. 208,246
Int. Cl.³ G03C 5/00
U.S. Cl. 430—1 11 Claims



1. In the method of constructing a surface relief hologram on a positive photoresist detector wherein the detector is selectively altered by exposure to object modified and reference coherent beams that are coherent with each other and which intersect at a finite angle at the detector, and thence the detector is developed by etching to remove altered portions of the photoresist, the improvement wherein the step of exposing the photoresist includes setting the relative intensity of the object modified and reference beams with a significant number of peaks in intensity across the object modified beam at the detector being greater than the reference beam intensity at the location of those peaks, and wherein the step of developing the exposed photoresist includes application of an etching solution

thereto for a short time to etch a maximum of 0.7 microns into the photoresist surface, whereby a desired depth of etch of the altered material is accomplished while minimizing undesired etching of unaltered material.

4,343,875

METHOD FOR THE ETCHING OF SILICON SUBSTRATES AND SUBSTRATE FOR THE EXECUTION OF THE METHOD

Dieter Spickenreuther, Wettingen, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 20, 1980, Ser. No. 161,447

Claims priority, application Switzerland, Jul. 4, 1979, 6230/79

Int. Cl.³ G03F *9/00*; H01L *21/312*; B44C *1/22*; C03C *15/00*

U.S. Cl. 430—5 **32 Claims**

1. A method for etching a silicon substrate (Si-substrate), comprising:

forming a protective layer of mineral glass adhering to the substrate and serving as a mask on at least some portions of said Si-substrate which are not to be etched, said mineral glass protective layer having local openings through which surface areas of the substrate are exposed to an etchant for etching of exposed surface areas;

etching said substrate after formation of said mineral glass protective layer;

wherein said mineral glass protective layer forming step comprises:

applying to the Si-substrate a mixture containing finely dispersed mineral glass particles having a size of about 1–100 μm a component which can be polymerized by actinic radiation and fixing agents, or of a compound which is heat-fusable into mineral glass;

exposing the applied mixture to actinic radiation to polymerize said applied mixture

removing portions of said polymerized mixture from those portions of the Si-substrate to be etched;

heating the non-removed portions of said polymerized mixture for the purpose of forming said etching mask of mineral glass adhering to such Si-substrate.

31. A silicon-substrate (Si-substrate) provided with an etching mask to cover selected surface areas of the Si-substrate not to be etched, comprising:

said etching mask at least partially consisting of a mixture suitable for the formation of a layer of mineral glass adhering to the Si-substrate;

said substrate at least over parts of its surface area being covered by a layer consisting of a mixture containing finely dispersed mineral glass and a component which is polymerizable by actinic radiation.

4,343,876

DOT-ENLARGEMENT PROCESS FOR PHOTOPOLYMER LITHO MASKS

Robert B. Heiart, Middletown, and James W. O'Neil, Howell, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 21, 1980, Ser. No. 209,202

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—5 **20 Claims**

1. A process of permanently enlarging the area covered by a polymeric relief image containing crosslinkable moieties useful as a polymer mask, which process consists essentially of contacting the image area with a solution containing a swelling agent to effect image enlargement, and a crosslinking agent to react with and link the crosslinkable moieties of said polymeric relief image, whereby the image is enlarged and is fixed in its enlarged state.

4,343,877

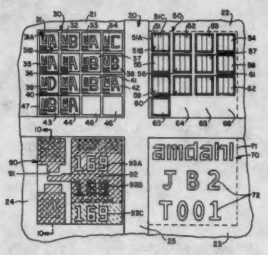
SYSTEM FOR DESIGN AND PRODUCTION OF INTEGRATED CIRCUIT PHOTOMASKS AND INTEGRATED CIRCUIT DEVICES

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Santa Clara, Calif.

Filed Jan. 2, 1981, Ser. No. 222,253

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—5 **19 Claims**



1. In a method for providing mask sequence and mask alignment information on a set of photomasks designed to be used in processing semiconductor wafers into integrated circuits wherein said photomasks are to be used in a prearranged sequence during sequential photolithography steps and a topography pattern on each photomask except the first is required to be aligned to the wafer topography pattern created by use of at least one prior photomask in accordance with a predetermined mask alignment formula, the steps of:

selecting prior to photomask design and generation a plurality of common corner subareas of each circuit topography pattern area on each photomask to be used as designated information locations, one of said designated information locations being adapted to contain a two-dimensional rectangular array of locations for use as a mask sequence array and another of said designated information locations being adapted to contain a two-dimensional rectangular array of locations for use as an alignment key pattern array;

forming in each said mask sequence array on each photomask a mask sequence indicia positioned in a unique one of said mask sequence array locations; and

forming in said alignment key pattern array on each photomask an alignment key pattern in the form of one or both of alignment and aligning keys positioned in prearranged ones of said key locations.

4,343,878

SYSTEM FOR PROVIDING PHOTOMASK ALIGNMENT KEYS IN SEMICONDUCTOR INTEGRATED CIRCUIT PROCESSING

Ping-Wang Chiang, Los Gatos, Calif., assignor to Amdahl Corporation, Santa Clara, Calif.

Filed Jan. 2, 1981, Ser. No. 222,257

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—5 **9 Claims**

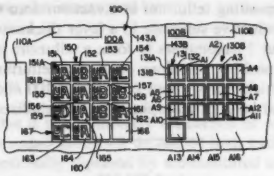
1. In a method for providing self-instructing mask alignment information on a set of photomasks designed to be used in number sequence during sequential photolithography steps in processing semiconductor wafers into integrated circuits wherein the topography pattern on each photomask in said set except the first one is required to be aligned to the wafer

topography pattern created by use of at least one predetermined lower number photomask in accordance with a predetermined mask alignment formula for said set, the steps of:

selecting prior to photomask design and generation a common photomask subarea to be used as an alignment key pattern area on each photomask in said set, said alignment key pattern area having an array of sequential key locations;

designating for each photomask after the first one an alignment key location which is either the same alignment key location as the immediately preceding photomask or the next alignment key location in said array;

forming on the first photomask of said set a mask key pattern comprising aligning keys for all associated higher number photomasks designed in accordance with said mask alignment formula to be aligned to the topography created by use of said first photomask, each of said aligning keys



being formed at key locations corresponding to said designated alignment key location for said associated photomask;

forming on each of the remaining photomasks of said set a mask key pattern comprising an alignment key at said designated alignment key location and aligning keys for any associated higher numbered ones of said photomasks designed in accordance with said mask alignment formula to be aligned to topography created by use of each said photomask, each of said aligning keys being formed at a key location corresponding to said designated key location for said associated photomask; and

forming on each photomask having a mask sequence number greater than two and being the first photomask in said set to have a particular designated alignment key location, a used key pair blot mark at a key location immediately preceding said designated alignment key location for said mask.

4,343,879

MULTIPLE LAYER OPTICAL DATA STORAGE AND RECORDING MEDIA

Jerome Drexler, Los Altos Hills, and Eric W. Bouldin, Woodside, both of Calif., assignors to Drexler Technology Corporation, Mountain View, Calif.

Filed Aug. 22, 1980, Ser. No. 181,378

Int. Cl.³ G03C *1/02, 1/76, 1/84;* **G01D** *15/14*

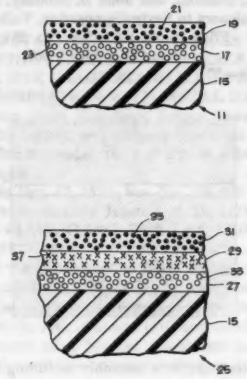
U.S. Cl. 430—14 **8 Claims**

1. An optical data storage and recording medium, comprising

a supporting substrate,

at least a first layer of low melting temperature suspensive colloid disposed on said substrate, said layer for recording and storing optically written data, wherein said suspensive colloid contains a uniform areawise distribution of very small, non-filamentary, reflective silver particles dispersed in said suspensive colloid, having a diameter primarily less than 350 angstroms and greater than 50 angstroms, said layer being 20% to 80% reflective of light and being electrically non-conducting, and

at least one layer of low melting temperature suspensive colloid disposed atop said silver metal layer, containing dispersed, very small reflective metal particles having a diameter primarily less than 350 angstroms and larger than 50 angstroms, said metal particles comprising at least one metal other than silver which is solid at ambient temperatures, said layer having a particle concentration for reducing the reflectivity of said first layer to a desired degree.



4,343,880

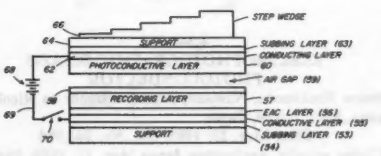
DYE-FORMING ELECTRICALLY ACTIVATABLE RECORDING MATERIAL AND PROCESS

Mark Lelental, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 55,945, Jul. 9, 1979, abandoned. This application Jun. 20, 1980, Ser. No. 161,626

Int. Cl.³ G03G *15/24, 13/22*

U.S. Cl. 430—42 **23 Claims**



1. In an electrically activatable recording element comprising an electrically conductive support having thereon, in sequence:

(a) an electrically activatable recording layer comprising an organic silver salt and a reducing agent,

(b) a photoconductive layer separated from (a) by an air gap of up to 20 microns, and

(c) and electrically conductive layer on (b), the improvements comprising, as said recording layer, the following, in reactive association:

(I) (A) a dye-forming coupler, and

(B) an oxidation-reduction combination comprising

(i) an organic silver salt oxidizing agent, with

(ii) a reducing agent which, in its oxidized form, forms a dye with said dye-forming coupler; and

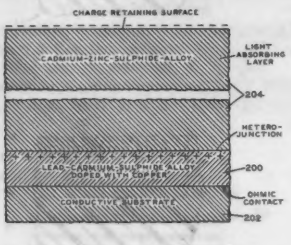
(II) an electrically active conductive layer on said electrically conductive support.

4,343,881

MULTILAYER PHOTOCONDUCTIVE ASSEMBLY WITH INTERMEDIATE HETEROJUNCTION

Arden Sher, Belmont, and John B. Mooney, Saratoga, both of Calif., assignors to Savin Corporation, Valhalla, N.Y.

Filed Jul. 6, 1981, Ser. No. 281,223
Int. Cl.³ G03G 5/082
U.S. Cl. 430—57 14 Claims



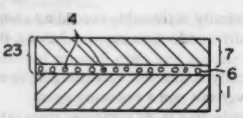
1. A photoconductive assembly including in combination a conductive substrate, a first semiconductive layer of a type of one carrier polarity, said first layer having a band gap, said first layer being in low-resistance contact with said conductive substrate, and a light-absorbing second semiconductive layer of a type of opposite carrier polarity to the carrier polarity of said first layer, said second layer having a band gap wider than the band gap of said first layer, said first and second layers forming a rectifying heterojunction therebetween.

4,343,882

ELECTROPHOTOGRAPHIC BISAZO PHOTOCONDUCTOR

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 18, 1981, Ser. No. 244,984
Claims priority, application Japan, Apr. 11, 1980, 55-47668
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—58 7 Claims



1. An electrophotographic photoconductor wherein said photoconductive layer comprises a charge carrier producing layer comprising said bisazo pigment, formed on said electroconductive support material, and a charge transporting layer formed on said charge carrier producing layer, containing a charge transporting material, the thickness of said charge carrier producing layer being not more than 5 μm and that of said charge transporting layer being in the range of about 3 μm to 50 μm.

4,343,883

METHOD FOR PRODUCING AN ELECTROPHOTOGRAPHIC RECORDING MATERIAL HAVING DUAL LAYER OF AMORPHOUS AND CRYSTALLIZED SE

Karl-Heinz Kassel; Manfred Lutz, both of Warstein; Josef Stuke, Marburg, and Hubert Walsdorfer, Warstein, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 30, 1980, Ser. No. 221,445
Claims priority, application Fed. Rep. of Germany, Jan. 5, 1980, 3000305
Int. Cl.³ B05D 5/12
U.S. Cl. 430—128 13 Claims

1. In a method for producing an electrophotographic recording material composed of a dual layer of amorphous and crystallized selenium applied to an electrically conductive substrate, the improvement comprising the steps of:

vapor-depositing tellurium in a vacuum onto the surface of the conductive substrate to a layer thickness of about 0.5 to about 5 nanometers to form a tellurium layer; and

vapor-depositing selenium onto said tellurium layer to a layer thickness of about 20 to about 100 microns to form the dual layer of amorphous and crystallized selenium.

4,343,884

DIAZOTYPE DEVELOPING PROCESS AND ACIDIC DEVELOPER WITH AMINE BASE SALT

Peter Muller, and Henry Mustacchi, both of Port Washington, N.Y., assignors to Andrews Paper & Chemical Co., Inc., Port Washington, N.Y.

Filed Dec. 29, 1980, Ser. No. 220,423
Int. Cl.³ G03C 5/34
U.S. Cl. 430—149 13 Claims

1. A liquid developer for the moist development of a latent image on a light-sensitive and exposed diazotype material, which comprises;

(a) an azodye coupler;

(b) a non-volatile salt of an amine base and a carboxylic acid having a molecular weight of from 46 to about 210; and

(c) a liquid, non-volatile organic dilutant for (a) and (b) described above, selected from the group consisting of polyhydric alcohols and polyhydric alcohol-ethers;

said developer having a pH within the range of from about 5.5 to about 7.0.

10. A process of developing the latent image on a light-sensitive and exposed diazotype material, which comprises;

applying the developer of claim 1 to said diazotype material.

4,343,885

PHOTOTROPIC PHOTOSENSITIVE COMPOSITIONS CONTAINING FLUORAN COLORFORMER

Edward J. Reardon, Jr., El Toro, Calif., assignor to Dynachem Corporation, Tustin, Calif.

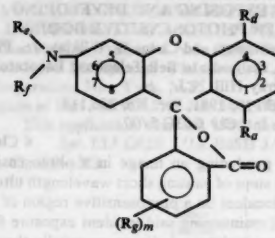
Continuation of Ser. No. 97,096, Nov. 23, 1979, abandoned, which is a continuation of Ser. No. 904,145, May 9, 1978, abandoned. This application Oct. 8, 1980, Ser. No. 195,285
Int. Cl.³ G03C 1/52, 1/68
U.S. Cl. 430—177 46 Claims

1. A stable phototropic photosensitive composition which comprises:

a. at least one component capable of curing, crosslinking or polymerizing upon suitable initiation,

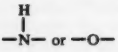
b. an initiator for said component that is potentiated by actinic radiation,

c. a fluoran colorformer compound capable of becoming more intensely colored upon contact with a color activator, said fluoran compound having the structural formula



where

R_a is hydrogen or an aliphatic group of one to 12 carbon atoms that is unsubstituted or optionally substituted and that may be interrupted by



and that is bound directly via carbon or oxygen;

R_b is an amino group where one or both hydrogen atoms are optionally replaced by unsubstituted or substituted aliphatic groups, cycloaliphatic groups, aromatic groups or mixed aliphatic-aromatic groups or R_b is a heterocyclic group of 3 to 12 ring members bound via a ring nitrogen and containing in addition to nitrogen, one or more of oxygen and sulfur as hetero ring members

or R_a and R_b together form a condensed aromatic nucleus;

R_c is hydrogen, halogen, an aliphatic group of one to 12 carbon atoms that is unsubstituted or substituted and that may be interrupted by nitrogen or oxygen and that is bound directly via carbon or oxygen, or R_c is an amino group where one or both hydrogen atoms are optionally replaced by unsubstituted or substituted aliphatic groups, cycloaliphatic groups, aromatic groups, mixed aliphatic-aromatic groups or where R_c is a heterocyclic group with three to twelve ring members containing one or more of nitrogen, oxygen and sulfur as hetero ring members or R_c is an aromatic group that is unsubstituted or optionally substituted or a mixed aliphatic-aromatic group or an aromatic ether or aliphatic-aromatic ether group;

R_d is hydrogen, lower aliphatic or an amino group where one or both hydrogen atoms are optionally replaced by unsubstituted or substituted aliphatic groups, cycloaliphatic groups, aromatic groups, mixed aliphatic-aromatic groups or R_d is a heterocyclic group of 3 to 12 ring members containing one or more of nitrogen, oxygen and sulfur as hetero ring members;

R_e and R_f each independently is hydrogen, unsubstituted or substituted aliphatic of one to 12 carbon atoms which may be interrupted by oxygen or nitrogen, and which is be bound directly via carbon, cycloaliphatic groups, aromatic groups, mixed aliphatic-aromatic groups, or R_e and R_f, together with the nitrogen atom form a heterocyclic group of 3 to 12 ring members, optionally containing, in addition to nitrogen, one or more of sulfur and oxygen as hetero ring members;

$(R_g)_m$ represents one to 3, independently, of hydrogen, lower aliphatic bound directly via carbon or oxygen, or is halogen, acetamido or optionally substituted amino

and provided that at least one of R_b, R_c and R_d is an amino group, as defined, and

d. a latent activator for the fluoran color-former that is capable of activating the fluoran compound under the influence of actinic light and is capable of generating or facilitating the production of an acidic substance which can react with said fluoran compound to activate a color change.

4,343,886

METHOD FOR STABILIZING DYE IMAGES IN COLOR PHOTOGRAPHIC SENSITIVE MATERIALS USING A LIGAND AS A DYE IMAGE STABILIZER PRECURSOR IN COMBINATION WITH METAL IONS

Kotaro Nakamura; Seiiti Kubodera; Satoru Sawada; Hiroshi Hara; Yoshiaki Suzuki, and Shigeru Oono, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

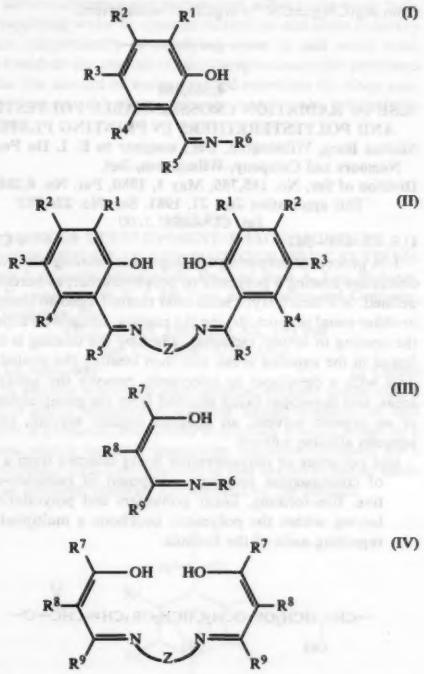
Filed Oct. 17, 1980, Ser. No. 198,026

Claims priority, application Japan, Oct. 18, 1979, 54-134433

Int. Cl.³ G03C *1/40, 7/00, 1/84, 1/10*

U.S. Cl. 430—237 **26 Claims**

1. A process for processing a silver halide color photographic sensitive material containing at least one compound selected from the compounds represented by the following general formulae (I), (II), (III) and (IV) and alkali metal salts, alkaline earth metal salts, borates, aluminium salts and zinc salts thereof with a solution containing divalent ions of at least one metal selected from the group consisting of copper, cobalt, nickel, palladium and platinum:



wherein the formulae (II) and (IV) include the tautomers; R^1, R^2, R^3 and R^4 each represent a hydrogen atom, a halogen atom, a cyano group, or an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic group bonded to the benzene nucleus directly or through a divalent connecting group, or R^1 and R^2, R^2 and R^3 or R^3 and R^4 may combine and represent a non-metallic atomic group necessary to form a 6 member ring; R^5, R^8 and R^9 each represent a hydrogen atom, an alkyl group or an aryl group, R^6 represents a hydrogen atom, an alkyl group, an aryl group or a hydroxyl group, R^7 represents an alkyl group or an aryl group, or R^7 and R^8 or R^8 and R^9 may

combine and represent a non-metallic atomic group necessary to form a 5 member to 8 member ring; and Z represents a divalent connecting group consisting of non-metallic atoms.

4,343,887

SENSITIZING BATH FOR SILVER CONTAINING RESIST

Adam Heller, Bridgewater, and Richard G. Vadimsky, Somerville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1981, Ser. No. 263,684
Int. Cl.³ G03C 5/00
U.S. Cl. 430—272 **12 Claims**

1. A method of fabricating an article comprising forming a silver containing layer of material on a layer of glassy material, said glassy material being disposed on a substrate, said silver containing material consisting essentially of at least one chemical compound consisting of the reaction product of a silver complex and at least one component of the material, said forming being by immersion of said glassy material in a sensitizing bath comprising a silver cyanide complex and a metal cyanide complex which introduces into the solution a CN^- ion concentration exceeding that of the cyanide ion concentration from $Ag(CN)_2 \rightleftarrows CN^- + AgCN$ at equilibrium.

4,343,888

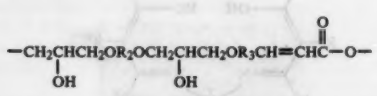
USE OF RADIATION CROSSLINKABLE POLYESTERS AND POLYESTERETHERS IN PRINTING PLATES

Marion Burg, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 145,755, May 1, 1980, Pat. No. 4,284,710. This application Jan. 21, 1981, Ser. No. 226,882
Int. Cl.³ G03C 5/00
U.S. Cl. 430—302 **4 Claims**

1. A process of preparing a lithographic printing plate which comprises coating a polyester or polyesterether, as hereinafter defined, or a dicarboxylic semi-ester thereof, onto an aluminum or other metal support, drying the coating, imagewise exposing the coating to actinic radiation, whereby the coating is crosslinked in the exposed areas, and then treating the coated support with a developer to selectively remove the unexposed areas, said developer being selected from the group consisting of an organic solvent, an aqueous organic solvent, and an aqueous alkaline solvent;

said polyester or polyesterether being selected from a class of condensation polymers composed of radiation-sensitive, film-forming, linear polyesters and polyesterethers having within the polymeric backbone a multiplicity of repeating units of the formula:



wherein R_2 is a divalent aryl, alkyl, aralkyl, or cycloalkyl radical having two to twenty carbon atoms, which radical may be substituted with a C_1 to C_{10} alkyl or cycloalkyl, aryl, or halogen group; and wherein R_3 is a divalent aryl, aroyl, arylacryloyl, furylacryloyl, pyridylacryloyl, or thienylacryloyl group in which the aromatic unit for aryl is phenyl, biphenyl, or naphthyl and wherein one of the R_3 cyclic carbon atoms is directly attached to the β-carbon of the α,β-ethylenic ester group of the repeating unit, and wherein the aromatic unit of the R_3 group can be substituted with a C_1 to C_8 alkyl or cycloalkyl, aryl, aralkyl, or halogen group.

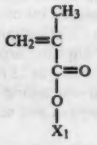
4,343,889

PROCESS OF EXPOSING AND DEVELOPING TERPOLYMER PHOTOSENSITIVE BODIES

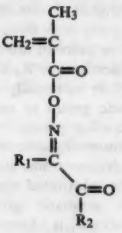
Elsa Reichmanis, Piscataway, and Cletus W. Wilkins, Jr., Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1981, Ser. No. 236,114
Int. Cl.³ G03C 5/00
U.S. Cl. 430—311 **6 Claims**

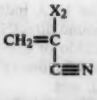
1. A process for producing an image in a photosensitive body comprising the steps of causing short wavelength ultraviolet radiation to be incident on a photosensitive region of said photosensitive body, maintaining said incident exposure for a time sufficient to cause a chemical change essentially through the thickness of said photosensitive region, and developing said photosensitive body characterized in that said photosensitive body comprises a photosensitive material, comprising an organic polymer, said organic polymer being formed from the monomers comprising (1) a methacrylate ester compound represented by the formula



where X_1 is an alkyl, (2) a 3-oximino-2-butanone methacrylate based compound represented by the formula



where R_1 is chosen from the group consisting of methyl, ethyl and propyl, R_2 is chosen from the group consisting of methyl, ethyl and propyl or R_1 and R_2 are connected to form a 5 or 6 member ring, and (3) an acrylonitrile based compound represented by the formula



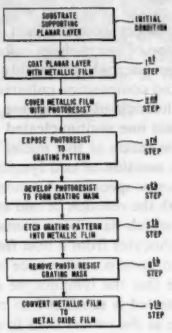
where X_2 is CH_3 or Cl, whereby said chemical reaction takes place essentially through said photosensitive region by use of less than 200 millijoules per cm^2 of said short wavelength ultraviolet radiation.

4,343,890

METHOD FOR MAKING PLANAR OPTICAL WAVEGUIDE COMPRISING THIN METAL OXIDE FILM INCORPORATING A RELIEF PHASE GRATING

William Phillips, Princeton, N.J.; Clyde C. Neil, Levittown, Pa., and Jacob M. Hammer, Plainsboro, N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 927,513, Jul. 24, 1978, Pat. No. 4,227,769.
This application Mar. 27, 1980, Ser. No. 134,657
Int. Cl.[3] G02B 5/14; B05D 3/06, 3/02
U.S. Cl. 430—321 5 Claims



1. A method for fabricating an optical-coupling relief phase grating on a planar optical waveguide initially comprising a substrate of a first dielectric material supporting a planar layer of a second dielectric material, said second dielectric material exhibiting an index of refraction greater than that of said first dielectric material and both said first and second dielectric materials remaining stable at a given temperature at which a given metal oxidizes into a metal oxide having a third index of refraction greater than that of said second index of refraction, said method comprising the steps of:

(a) coating the surface of said layer with a film of said given metal having a thickness in the range of 20–200 nanometers
(b) covering said metal film with photoresist,
(c) exposing said photoresist with a grating pattern of light defining said relief pattern,
(d) developing the exposed photoresist to form a photoresist mask of said grating pattern of the surface of said metallic filter,
(e) etching said grating pattern into said metallic film,
(f) removing said photoresist mask, and then
(g) annealing at least said film of said waveguide at said given temperature for a sufficient time in an oxygen-containing atmosphere to convert substantially said entire metallic film into a metal oxide film having said relief phase grating on the surface of said metal oxide film.

4,343,891

FIXING OF TETRA (HYDROCARBYL) BORATE SALT IMAGING SYSTEMS

Steven M. Aasen, Lakeland, Minn.; Rex J. Dalzell, Somerset, Wis.; Edward J. Goettert, Lake Elmo, Minn.; Brian N. Holmes, Oakdale, Minn., and George V. D. Tiers, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 23, 1980, Ser. No. 152,615
Int. Cl.[3] G03C 5/24
U.S. Cl. 430—337 26 Claims

1. A method for desensitizing a radiation sensitive imaging system comprising a dye and a tetra(hydrocarbyl)borate in a binder which method comprises converting the tetra(hydrocarbyl)borate to a compound having fewer than four carbon-to-boron bonds after said radiation sensitive imaging system has been imagewise exposed to radiation, said converting being effected by introducing into reactive association with said borate a material selected from the group consisting of acids, aldehydes, peroxides, quinones, iodine or readily reducible metal ions.

4,343,892

METHOD AND APPARATUS FOR SILVER RECOVERY DURING PHOTOGRAPHIC PROCESSING

Kazushige Uenaka; Shinichi Kashiwagi; Toshiro Tahara; Kazuo Shirasu, all of Minami-ashigara; Yoshio Usui, Tokyo; Akira Abe, Tokyo; Fumio Nakagawa, Tokyo, and Tetsuya Masuda, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 12, 1980, Ser. No. 148,608
Claims priority, application Japan, May 11, 1979, 54-58300
Int. Cl.[3] G03C 5/26
U.S. Cl. 430—398 4 Claims

1. A method for recovering silver from a processing fluid carried by a photographic material that has been transported through a silver-containing photographic processing fluid, wherein a silver recovery means comprising a plurality of adjacent cascade water tanks is provided between a tank for said silver-containing processing fluid and a water wash tank, and supplying water by cascade method to said silver recovery means independently of supplying water to said water wash tank based on the amount of photographic materials processed so that the amount of water supplied maintains the silver concentrations in said silver recovery water tanks substantially constant.

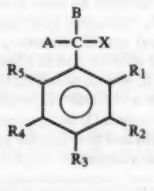
4,343,893

MASKED DEVELOPMENT/IMAGE MODIFIER COMPOUNDS OF SILVER PHOTOGRAPHIC SYSTEMS

Dennis S. Donald, Mendenhall, Pa., and Ross A. Lee, Webster, N.Y., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 25, 1980, Ser. No. 172,999
Int. Cl.[3] G03C 5/26, 1/02
U.S. Cl. 430—401 11 Claims

3. A process wherein a photographic element comprising a support and a photosensitive silver halide emulsion on said support is prepared, and is used to produce a silver image by a process which includes imagewise exposure followed by a development step, characterized in that the silver halide emulsion as prepared contains a compound of the formula



wherein

A=hydrogen, alkyl, or alkylcarboxyalkyl;
B=hydrogen, alkyl, or carboxyalkyl
R_1–R_5=hydrogen, halogen, $-CF_3$, cyano, or nitro;
X is a radical which, after release, forms either 1-phenyl-5-mercaptotetrazole, 5-nitroindazole, 3,4,5,6-tetrahydro-2-pyrimidinethiol, or phenidone;

which compound remains inactive prior to the time of development.

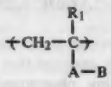
4,343,894

PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT WITH ANTISTATIC PROTECTIVE LAYER

Junji Minamizono; Shinzo Kishimoto, and Masakazu Yoneyama, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

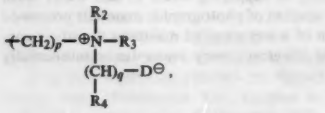
Filed Oct. 15, 1980, Ser. No. 197,355
Claims priority, application Japan, Oct. 15, 1979, 54-132537
Int. Cl.³ G03C 1/78
U.S. Cl. 430—528 22 Claims

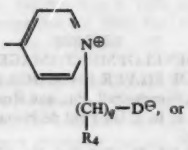
1. A photographic element comprising:
a support;
a light-sensitive silver halide layer; and
a protective layer wherein said protective layer is comprised of a polymer or copolymer in an amount of 0.005 to 5 grams per square meter of said element, said polymer or copolymer having a repeating unit represented by the formula (I)

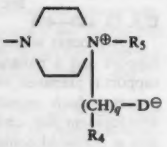


(I)

wherein R1 represents hydrogen or a methyl group, A represents a —COO— or —CONH— group, and B represents







wherein R_2 and R_3 represent an alkyl group containing from 1 to 6 carbon atoms; R_4 represents hydrogen or a methyl group; R_5 represents an alkyl group containing from 1 to 3 carbon atoms; p is an integer of from 2 to 6; when R_4 is hydrogen, q is an integer of from 1 to 4, and, when R_4 is a methyl group, q is 1; and D^- represents a $—COO^-$ or $—SO3^-$ group,
the compound of formula (I) being present in said copolymer in an amount sufficient to effect the antistatic properties of the photographic element.

4,343,895

ENCAPSULATED ANTIGENIC TUMOR SPECIFIC SUBSTANCES AND METHODS FOR DETECTING CANCER USING SAID SUBSTANCES

Stephen Sugaar, 21 Louis St., Staten Island, N.Y. 10304

Filed May 23, 1980, Ser. No. 152,535
Int. Cl.³ C12Q 1/68; G01N 33/54
U.S. Cl. 435—6 3 Claims

1. A process for the detection of cancer of defined pathohistological type comprising obtaining a blood or tissue sample of viable lymphocytes from a host,
contacting said lymphocyte sample with a liposome composition comprising an encapsulated aqueous phase which contains antigenic tumor-specific substances which comprises antigenic (i) macromolecular tumor-specific substances extracted from cancer cells or separated from cancer cells, or (ii) cancer cell material or membranes separated from cancer cells, characterized by a degree of antigenic activity such that when said composition is (i) contacted with a composition of sensitized lymphocytes taken from a host having cancer of the pathohistologic type as the cancer cells from which the antigenic tumor-specific substances were obtained, and (ii) in the presence of a suspension of macrophage cells prepared from pulmonary alveolar macrophages freshly obtained from rabbits, and the mixed composition cultured in a CO_2 incubator at 37° C. in a humidified atmosphere for between 24 and 72 hours, at least one multinucleated giant macrophage cell containing in excess of five nuclei will have formed; and
examining the reaction of said lymphocyte sample and said antigenic tumor-specific substances and comparing said reaction with the reaction of said antigenic tumor-specific substances which have been contacted with a sample of viable lymphocytes from a host free from cancer,
whereby when there is a difference in said two reactions, it is indicative that the lymphocyte sample taken from the host being tested is sensitized to cancer of the pathohistologic type as the cancer cells from which the antigenic tumor-specific substances were obtained.

4,343,896

METHOD AND TEST PACK FOR THE DEMONSTRATION AND DETERMINATION OF AN ANTIGEN OR ANTIBODY

Gerrit Wolters, and Leonardus P. C. Kuypers, both of Oss, Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Continuation of Ser. No. 653,579, Jan. 29, 1976, abandoned. This application May 1, 1980, Ser. No. 145,297
Claims priority, application Netherlands, Feb. 1, 1975, 7501215
Int. Cl.³ G01N 33/54
U.S. Cl. 435—7 37 Claims

1. A process for the detection or determination of an at least bivalent antigen in a liquid sample, said process comprising the steps of:
(a) providing a given quantity of a first antibody against said at least bivalent antigen to be detected or determined, which first antibody is or has been labeled;
(b) providing a given quantity of a second antibody against said at least bivalent antigen to be detected or determined, said second antibody being produced in a different animal species than said first antibody;
(c) providing a given quantity of an insolubilized third antibody against said second antibody;
(d) contacting and incubating a sample of a liquid containing said at least bivalent antigen to be detected or determined with the components of steps (a), (b), and (c) to form a reaction mixture having a liquid phase and a solid phase;
(e) separating the liquid phase from the solid phase; and
(f) detecting or determining the labeled component in either the liquid phase or the solid phase, which detection or determination is a measure of the presence of quantity of said at least bivalent antigen to be detected or determined.

10. A test pack for the detection or determination of an at least bivalent antigen in a fluid sample comprising:
a. a given amount of a first antibody against the at least bivalent antigen to be detected or determined;
b. a given amount of a labelled second antibody against said at least bivalent antigen, said second antibody being produced in a different animal species than the first antibody;

c. a given amount of an insolubilized third antibody against said first antibody.

4,343,897

REAGENT FOR THE DETERMINATION OF LIPASE AND PROCESS FOR PREPARING SAME

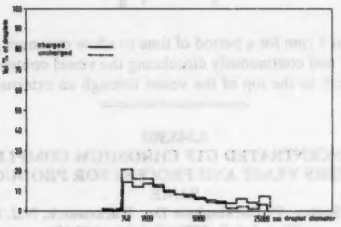
Ulrich Neumann, Peissenberg; Karl-Wolfgang Knitsch, Andechs; Joachim Ziegenhorn, Starnberg; Albert Röder; Werner Zwez, both of Seeshaupt, and Werner Krämer, Bernried, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,864

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1979, 2904305

Int. Cl.³ C12Q *1/44*

U.S. Cl. 435—19 18 Claims



1. A reconstitutable dry reagent for the turbidimetric determination of lipase, which reagent forms an emulsion upon adding water and comprises substrate oil, protective colloid, emulsifier and an activator for lipase, said reagent containing:

0.2 to 10% by weight of liquid triglyceride,

20 to 90% by weight of protective colloid,

5 to 60% by weight of an alkali metal salt of bile acid,

0.001 to 0.1% by weight of colipase,

0.1 to 2.0% by weight of preserving agent,

5 to 20% by weight of urea,

3 to 50% by weight of buffer substance for pH 6.0 to 10.5 and

0.5 to 5% by weight of said activator.

4,343,898

PROCESS FOR PREPARING ESTERS OF HUMAN INSULIN

Jan Markussen, Herlev, Denmark, assignor to Novo Industri A/S, Denmark

Filed Feb. 10, 1981, Ser. No. 233,051

Claims priority, application Denmark, Feb. 11, 1980, 574/80; Aug. 28, 1980, 3662/80

Int. Cl.³ C12P *21/04*

U.S. Cl. 435—71 10 Claims

1. In a process for preparing human insulin, the improvement which comprises transpeptidizing into a human insulin Thr^{B30}-ester in high yield an insulin compound or a salt or complex thereof convertible into a human insulin Thr^{B30}-ester by reacting a non-Thr^{B30}-ester insulin compound or salt or complex thereof with an L-threonine ester or a salt thereof in a mixture of water and a water miscible organic solvent, in the presence of trypsin, and in the optional presence of up to 10 equivalents of acid per equivalent of the L-threonine ester, the content of water in the reaction solution exceeding about 10% and being less than 50% v/v, and the reaction temperature being below 50° C.

4,343,899

PROCESS FOR PRODUCING STABLE AQUEOUS SOLUTION OF ACRYLAMIDE OR METHACRYLAMIDE

Ichiro Watanabe, and Yoshiaki Satoh, both of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1980, Ser. No. 120,960

Claims priority, application Japan, Feb. 13, 1979, 54/14276

Int. Cl.³ C12P *13/02*

U.S. Cl. 435—129 9 Claims

1. A process for producing a stable aqueous solution of acrylamide or methacrylamide by subjecting acrylonitrile or methacrylonitrile in water to the action of microorganisms having a nitrilasic activity, selected from the genus Corynebacterium, the genus Nocardia, the genus Bacillus, and genus Bacteridium in the sense of Prevot, the genus Micrococcus or the genus Brevibacterium in the sense of Bergey, which comprises treating said microorganisms with a water soluble dialdehyde before reaction with the nitrile to thereby inhibit polymerization of the acrylamide or methacrylamide produced.

4,343,900

PROCESS FOR THE PRODUCTION OF ACRYLAMIDE USING MICROORGANISM

Ichiro Watanabe, Yokohama, Japan, assignor to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1980, Ser. No. 194,653

Claims priority, application Japan, Oct. 4, 1979, 54/127389; Oct. 4, 1979, 54/127390

Int. Cl.³ C12P *13/02*; C12N *11/08*; C12R *1/15, 1/365*

U.S. Cl. 435—129 14 Claims

1. A process for preparing acrylamide from acrylonitrile in an aqueous medium containing a microorganism having nitrilasic activity, which comprises adding from 0.01% to 0.5% by weight, based on the weight of the aqueous medium containing the acrylonitrile, of at least one compound selected from the group consisting of alkali metal carbonates and bicarbonates to the aqueous medium, wherein pH is from 6.5 to 9.5 and said process is conducted for a period of time sufficient to convert said acrylonitrile to said acrylamide.

4,343,901

MAGNETIC SUPPORT MATRIX FOR ENZYME IMMOBILIZATION

Louis J. DeFilippi, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 22, 1980, Ser. No. 199,161

Int. Cl.³ C12N *11/14*

U.S. Cl. 435—176 17 Claims

1. A magnetic support matrix comprising a porous, refractory inorganic oxide selected from the group consisting of alumina, thoria, magnesia and combinations thereof, through the interior of which are dispersed particles, from about 0.05 micron to about 0.5 mm in size, of ferromagnetic materials in an amount from about 1 to about 40 percent by weight with less than about 10 percent of said particles on the surface of the oxide, said oxide being impregnated with a polyamine cross-linked with an excess of a bifunctional reagent so as to furnish pendant functional groups.

4,343,902

PRODUCTION OF IMMOBILIZED GLUCOSE ISOMERASE

Soichiro Ushiro, Kokubunji, Japan, assignor to CPC International Inc., Englewood Cliffs, N.J.

Filed Dec. 19, 1980, Ser. No. 217,976

Claims priority, application Japan, Feb. 5, 1980, 55-12111

The portion of the term of this patent subsequent to Apr. 21, 1998, has been disclaimed.

Int. Cl.³ C12N *11/02;* C12P *19/24;* C12N *9/92*

U.S. Cl. 435—177 4 Claims

1. A method for the production of immobilized glucose isomerase comprising:

(a) culturing a glucose-isomerase producing microorganism in a suitable medium to produce cells of the microorganism;

(b) treating an aqueous suspension of the cells of said microorganism at a pH of from about 5 to about 8 and at a temperature from about 30° C. to about 70° C. with from about 0.1% to about 20% by weight, based on the dry weight of the cells, of a non-ionic surfactant that solubilizes the glucose isomerase without solubilizing the polysaccharides in the cells, for a sufficient time to solubilize the glucose isomerase and give a glucose isomerase solution;

(c) separating the glucose isomerase solution from the cells; and

(d) adsorbing the glucose isomerase from said glucose isomerase solution on an ion exchange resin capable of adsorbing said polysaccharides.

4,343,903

PROCESS FOR OBTAINING CHOLESTEROL ESTERASE FROM MICRO-ORGANISMS

Klaus Beaucamp; Michael Nelboeck; Helmgard Gauhl; Hans Seidel, all of Tutzing; Wolfgang Gruber, Tutzing-Unterzeismering, and Herwig Brunner, Weilheim, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Aug. 6, 1980, Ser. No. 175,808

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1979, 2933646

Int. Cl.³ C12N *9/18*

U.S. Cl. 435—197 5 Claims

1. Process for obtaining cholesterol esterase from micro-organisms, which process comprises culturing a micro-organism capable of cholesterol esterase formation in a nutrient medium, in the presence of lecithin as an inducer, and then obtaining the enzyme from the culture medium or the cells.

4,343,904

PROCESS AND APPARATUS FOR GROWING ANIMAL CELLS

John R. Birch, High Wycombe; Terence Cartwright, Benson, and John A. Ford, Wallingford, all of England, assignors to G. D. Searle & Co., Skokie, Ill.

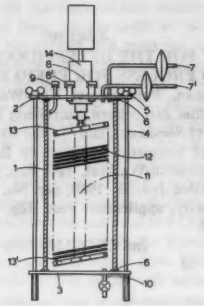
Filed Aug. 21, 1980, Ser. No. 180,063

Claims priority, application United Kingdom, Aug. 24, 1979, 7929567

Int. Cl.³ C12N *5/00;* C12M *1/14, 1/06*

U.S. Cl. 435—240 3 Claims

1. A process for growing animal cells by incubation with growth medium in a multi-plate growth apparatus which comprises substantially filling a vertically disposed cylindrical vessel with a mixture of cells and growth medium, which vessel is closed by top and bottom plates, the top plate being provided with a plurality of inlets and the bottom plate with an outlet, and the vessel is provided with a stack of parallel spaced-apart discs inclined at the angle of at least 5° from the horizontal fixedly mounted to a vertically disposed rotatable axial shaft within the vessel, while the vessel is vertically disposed allowing the cells to settle on the disc surfaces while maintaining the vessel contents at an optimum growth temperature and while infusing the vessel contents with a mixture of oxygen and carbon dioxide and thereafter while maintaining the vessel vertically disposed rotating the axial shaft at a speed



of at least 5 rpm for a period of time to allow optimum growth to occur and continuously circulating the vessel contents from the bottom to the top of the vessel through an external loop.

4,343,905

CONCENTRATED GTF CHROMIUM COMPLEX BREWERS YEAST AND PROCESS FOR PRODUCING SAME

Andrew Szalay, 99 Buckingham Dr., Hackensack, N.J. 07601

Filed Jul. 7, 1980, Ser. No. 166,454

Int. Cl.³ C12N *1/16, 1/18;* A61K *35/78*

U.S. Cl. 435—256 7 Claims

1. A method for concentrating the naturally occurring GTF chromium complex in a Brewer's yeast compound by reacting a Brewer's yeast solution with a nutritional media solution including chromium oxide and amino acids selected from the group consisting of nicotinic acid, glycine, L-glutamic acid and L-cystein.

2. A method for concentrating the naturally occurring GTF chromium complex in a Brewer's yeast compound, said method comprising the steps of:

preparing a nutritional and complex media including:

between about 29% and about 32% by weight of solids of nicotinic acid;

between about 17% and about 20% by weight of solids of glycine;

between about 17% and about 20% by weight of solids of L-glutamic acid;

between about 11% and about 14% by weight of solids of chromium oxide; and

between about 18% and about 21% by weight of L-cystein;

preparing a solution of Brewer's yeast wherein the yeast solids are diluted in water;

admixing the media and yeast solution and permitting the admixed yeast solution to react with the media; and

killing the yeast cells and spray drying the yeast solution to create a powder form.

4,343,906

HYBRID PLASMID OF PBR322 AND STREPTOMYCES PLASMID AND *E. COLI* CONTAINING SAME

Fritz Reusser, Portage, and Vedpal S. Malik, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 21, 1979, Ser. No. 68,418

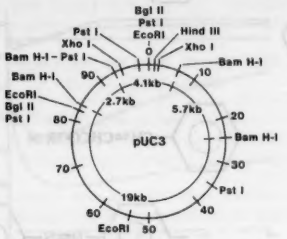
Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 6 Claims

4. Hybrid plasmid pUC1009 characterized as follows:

(a) it is a hybrid plasmid which has the entire nucleotide

sequence of plasmid pBR322 and a foreign DNA insert at the BamH-1 site of pBR322;



(b) said DNA insert being the 19 kb fragment of plasmid pUC3 shown in the drawing.

4,343,907

APPARATUS FOR PREPARING HIGH GRADE FERTILIZER

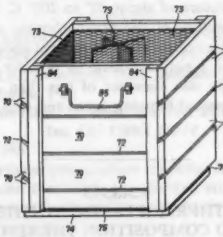
Gernot Graefe, Donnerskirchen, Austria

Division of Ser. No. 812,856, Jul. 5, 1977, Pat. No. 4,211,545. This application Jan. 9, 1980, Ser. No. 110,631

Claims priority, application Austria, Jul. 7, 1976, 4977/76; May 18, 1977, 3581/77

Int. Cl.³ C12M *1/04, 1/06*

U.S. Cl. 435—313 **7 Claims**



1. An apparatus for carrying out the aerobic decay of pressing residues from wine making to produce a high grade fertilizer, heat, carbon dioxide, and moisture which comprises a chamber for confining the residues in a loose mass, the walls of the chamber being composed of a metal mesh, the solid portions of the mesh having a cross section which slopes downwardly towards the interior of the chamber so that moisture condensing on the mesh is directed back to the mass, wherein the mesh walls are supported by a grating which is exterior of the chamber and wherein the supporting grating is composed of horizontally placed boards, the boards being spaced apart from one another to provide aeration spaces for air to enter the chamber and wherein the cross section of the spaces thus formed slopes downwardly towards the interior of the chamber so that moisture collecting therein is directed back towards the interior of the chamber.

4,343,908

OPTICAL GLASS HAVING $N_D=1.63\pm(1.5\times10^{-2})$, $V_D=59.5\pm1.0$ WITH A HIGH CHEMICAL STABILITY AND A LOW TENDENCY TO CRYSTALLIZATION

Marga Faulstich, Mainz, and Volmar Geiler, Mainz-Finthen, both of Fed. Rep. of Germany, assignors to Schott Glaswerke, Mains, Fed. Rep. of Germany

Filed Dec. 29, 1980, Ser. No. 221,110

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1979, 2952705

Int. Cl.³ C03C *3/08*

U.S. Cl. 501—78 **10 Claims**

1. An optical glass having $n_D=1.63\pm(1.5\times10^{-2})$, $v_D=59.5\pm1.0$, a high chemical stability and a low tendency to crystallization, and consisting of (in percent. by weight):

SiO_2	23–27
B_2O_3	24–30
SrO	18–31
La_2O_3	10–16
Al_2O_3	2–4
BaO	0–10
CaO	0–5
ZnO	0–6
Y_2O_3	0–5
ZrO_2	0–2
Li_2O, Na_2O and/or K_2O	0–1.5
As_2O_3 and/or Sb_2O_3	0–1
F and/or Cl	0–1,
wherein the sum of	
$SiO_2 + B_2O_3$ is	50–53,
the weight ratio	
SiO_2:B_2O_3 is	0.8–1.0,
the sum	
SrO + BaO is	26–31,
and the sum	
ZnO + La_2O_3 is	12–17.

4,343,909

HIGH TOUGHNESS CERAMIC CUTTING TOOL

James H. Adams, Rochester; Dennis J. Rich, Troy, and Frederick C. Holtz, Jr., Birmingham, all of Mich., assignors to The Valeron Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 141,103, Apr. 17, 1980, abandoned. This application May 1, 1981, Ser. No. 259,581

Int. Cl.³ C04B *35/48, 35/58, 35/49*

U.S. Cl. 501—98 **14 Claims**

1. An insert for a cutting tool consisting essentially of:
from about 1 to about 15% zirconia;
up to about 2% magnesia;
from about 5% to about 20% titanium diboride;
up to about 10% titanium dioxide; and
from about 60% to about 94% alumina.

4,343,910

COMPOSITIONS, ARTICLES AND METHODS FOR POLISHING SURFACES

Francis W. Busch, Jr., Southbury; Thomas J. Pallone, Monroe; Gene R. Berube, Cheshire, all of Conn.; Ambrish H. Vyas, Greenville, N.C.; Joseph R. Faryniarz, Ansonia, and John A. Russo, Westport, both of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Apr. 22, 1980, Ser. No. 142,831

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—82 **4 Claims**

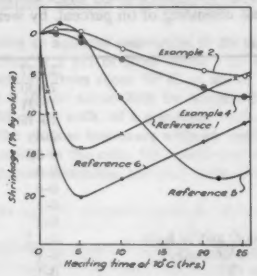
1. A foamed polishing composition which comprises:
(a) a foamed polymer; and having distributed throughout
(b) a particulate abrasive compound, said compound having a particle size (in micrometers) and a valley abrasion number the product of which yields a number which falls in the range between 300 and 1650.

4,343,911

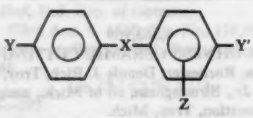
FOAMED THERMOPLASTIC RESIN ARTICLES AND FOAMABLE COMPOSITIONS AND FOAMING PROCESSES FOR THE PREPARATION THEREOF

Tsuneo Hoki, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 17, 1981, Ser. No. 284,264
Claims priority, application Japan, Jul. 17, 1980, 55/96833
Int. Cl.³ C08J 9/14
U.S. Cl. 521—88 9 Claims



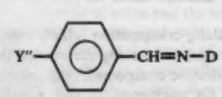
1. A foamable thermoplastic resin composition, comprising a thermoplastic synthetic resin, a blowing agent, and from about 0.01 to about 5 percent by weight, based on said thermoplastic synthetic resin, of at least one compound represented by the following Formula (I) or (II):



(I)

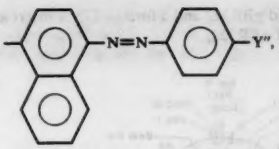
wherein X is a radical to be selected out of a group consisting of —CH=N—, —N=N— and

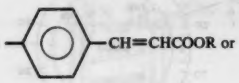
Y and Y' represent, respectively, a radical belonging to a group A consisting of —CN, —COOR, —OCOR, $—NO_2$, $—SO_3H$ and $—SO_3M$ and a radical belonging to a group B consisting of —OH, —OR, $—OR—OCH_3$, $—NH_2$, —NHR' and R or visa versa, or Y and Y' represent the same radical or different radicals belonging to said group B, with R being an aliphatic hydrocarbon group, R' being an aliphatic hydrocarbon group or a phenyl group, and M being a metal ion belonging to the Group 1*a* or 2*a* of the periodic table; and Z represents a hydrogen atom or a radical to be selected out of said group A;

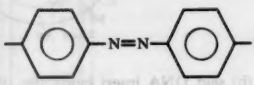


(II)

wherein D represents







and wherein Y'' represents a radical to be selected out of a group consisting of —H, —OH, —OR, $—OR—OCH_3$, $—NH_2$ and —NHR'; R represents an aliphatic hydrocarbon group; and R' represents an aliphatic hydrocarbon group or a phenyl group.

4,343,912

NOVEL METHOD FOR REDUCING THE PROCESSING TEMPERATURE OF THERMOPLASTIC POLYMERS AND NOVEL BLOWING AGENT CONCENTRATES PRODUCED THEREBY

In C. Lim, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 49,834, Jun. 18, 1979, Pat. No. 4,313,873, which is a continuation-in-part of Ser. No. 921,529, Jul. 3, 1978, abandoned. This application Sep. 21, 1981, Ser. No. 304,398
Int. Cl.³ C08J 9/06; C08L 91/00
U.S. Cl. 521—90 5 Claims

1. A process for producing a chemical blowing agent concentrate comprising a polycarbonate, a compound having a softening temperature of about 20° to 200° C. lower than the softening temperature of the polycarbonate and a chemical blowing agent at a temperature of at most about 180° C. comprising extruding a polycarbonate in powder form having a maximum particle size diameter of less than about 1000 microns with a chemical blowing agent and said compound.

4,343,913

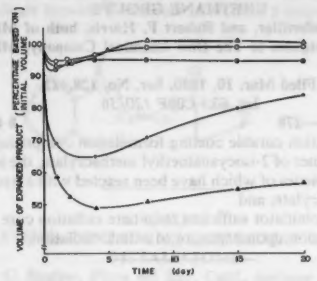
EXPANDED THERMOPLASTIC SYNTHETIC RESIN AND COMPOSITION THEREFOR

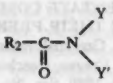
Seizaburo Watanabe, and Yutaka Matsuki, both of Suzuka, Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Division of Ser. No. 92,255, Nov. 7, 1979, abandoned, which is a division of Ser. No. 952,865, Oct. 19, 1978, Pat. No. 4,214,054. This application Jul. 28, 1980, Ser. No. 172,743
Claims priority, application Japan, Oct. 21, 1977, 52-125839; Dec. 23, 1977, 52-155401; Dec. 24, 1977, 52-156201; Feb. 20, 1978, 53-17698; Feb. 20, 1978, 53-17699; Feb. 20, 1978, 53-17700; Mar. 28, 1978, 53-35709; May 12, 1978, 53-55545
The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.
Int. Cl.³ C08J 9/14
U.S. Cl. 521—94 5 Claims

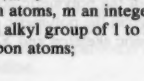
1. An expandable olefin polymer composition comprising an olefin polymer, a volatile organic blowing agent and at least one shrinkage reducing compound selected from the group represented by the formulas II or III as set forth below, said compounds being contained in said olefin polymer composi-

tion in an amount of from 0.1 to 10 weight percent based upon the weight of said olefin polymer:




(I)

wherein R_2 is an alkly group having 9 to 23 carbon atoms, Y and Y' each is a hydrogen atom, an alkyl having 1 to 24 carbon atoms, an acyl having 10 to 24 carbon atoms or a substituent of the formula $-(R_4O)_mA_2$ wherein R_4 is an alkylene group having 1 to 5 carbon atoms, m an integer of 1 to 10 and A_2 is a hydrogen atom, an alkyl group of 1 to 24 carbon atoms or an acyl of 10 to 24 carbon atoms;


(II)

wherein [R_3] means plural alkyl or hydroxyalkyl groups corresponding in number to the integer l, which may be the same or different, each having 9 to 23 carbon atoms, R_4 an alkylene group having 1 to 5 carbon atoms, k an integer of 0 to 7, l an integer of 2 to 8 and Z a l-valent residue of l-valent polyhydric alcohol from which l hydroxyl groups are eliminated.

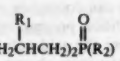
4,343,914

FLAME RETARDANT POLYURETHANE CONTAINING ALKYL BIS(3-HYDROXYPROPYL) PHOSPHINE OXIDE

Fui-Tseng H. Lee, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Jul. 22, 1981, Ser. No. 285,888
Int. Cl.³ C08G *18/14*
U.S. Cl. 521—168 **14 Claims**

1. A polyurethane composition rendered flame retardant by having combined therewith an effective amount of an alkyl bis(3-hydroxypropyl) phosphine oxide having the formula:



wherein R_1 may be the same or different radicals selected from the group consisting of hydrogen and the methyl radicals and R_2 is an alkyl radical of 2 to 8 carbon atoms.

4,343,915

POLYSPIROLACTONE POLYMERS

Kirk J. Abbey, Cleveland, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Aug. 12, 1981, Ser. No. 292,297
Int. Cl.³ C08G *59/42, 63/00, 63/76*
U.S. Cl. 523—414 **18 Claims**

1. A composition comprising on a weight basis between about 1% and 99% polyspirolactone polymer containing at least one spirolactone ring structure in the polymer structure and having a molecular weight between about 350 and 30,000, and between about 1% and 99% polyfunctional amine, whereby said amine is adapted to coreact upon heating and cross-link with said polyspirolactone polymer to form a thermoset cross-linked polymer.

4,343,916

POLYURETHANE OLIGOMER IMPACT AND SHRINKAGE MODIFIERS FOR THERMOSET POLYESTERS

James M. O'Connor, Clinton; Donald D. Lickei, Wallingford, and Willie J. Sessions, New Haven, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation of Ser. No. 16,857, Mar. 2, 1979, abandoned. This application Nov. 24, 1980, Ser. No. 210,076
Int. Cl.³ C08L *67/06, 67/02*
U.S. Cl. 525—28 **19 Claims**

1. In a thermoset polyester resin composition comprising a polyester resin, a catalyst, and at least one of a reinforcing agent or a filler; the improvement comprising the addition of an effective proportion of a polyurethane oligomer modifier, said oligomer prepared by reacting:

(a) an isocyanate-terminated prepolymer which is the reaction product of an organic diisocyanate with a polyol having an average equivalent weight of about 300 to about 4,000, in an equivalent ratio of NCO to OH ranging from about 1.02/1 to about 1.6/1 with

(b) an isocyanate reactive group-containing unsaturated monomer to result in an oligomer product having terminal reactive unsaturation and a final free NCO content of from 0 to about 1 percent.

4,343,917

WATER CURABLE, AMINO SILANE MODIFIED ALKYLENE-ALKYL ACRYLATE COPOLYMERS

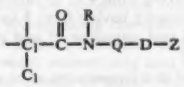
Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 70,785, Aug. 29, 1979, Pat. No. 4,291,136, which is a continuation-in-part of Ser. No. 892,153, Mar. 31, 1978, abandoned. This application Apr. 2, 1981, Ser. No. 250,443
Int. Cl.³ C08L *23/36;* H01B *7/28*
U.S. Cl. 525—106 **10 Claims**

1. Water curable, amino silane modified alkylene-alkyl acrylate copolymers, free of halide salts and halide ions, which contain at least 50 percent by weight alpha olefin units having the formula:

wherein A is hydrogen or an alkyl radical having one to 16 carbon atoms;

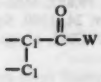
at least 0.1 percent by weight of polymerized units containing the radical having the formula:



wherein: C_1 is a carbon atom in the main polymer chain, R

is hydrogen or a hydrocarbon radical having one to 18 carbon atoms; Q is a hydrocarbon radical having one to 18 carbon atoms, bonded to —N— and —D— through carbon atoms; D is a silicon containing radical having the formula:

wherein V is hydrogen, a hydrocarbon radical having one to 18 carbon atoms or a hydrolyzable group and Z is a hydrolyzable group; and polymerized units having the formula:



wherein C_1 is a carbon atom in the main polymer chain and W is an alkoxy radical having one to 18 carbon atoms.

4,343,918

THERMOPLASTIC ELASTOMER BLENDS

Georg G. A. Bohm, Akron; Gary R. Hamed, Uniontown, and Lee E. Vescelius, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 1,623, Jan. 8, 1979, Pat. No. 4,250,273, which is a continuation-in-part of Ser. No. 879,308, Feb. 21, 1978, abandoned, which is a division of Ser. No. 806,036, Jun. 13, 1977, abandoned. This application Aug. 4, 1980, Ser. No. 175,094

Int. Cl.³ C08F *8/00*

U.S. Cl. 525—194 **3 Claims**

1. A process for making a thermoplastic elastomer blend composition, comprising the steps of:

providing a blend of a 1-olefin polymer, a random styrene-butadiene rubber copolymer and a highly saturated elastomer,

the amount of said 1-olefin homopolymer, ranging from about 10 to about 50 parts by weight, the amount of said styrene-butadiene rubber ranging from about 80 to about 15 parts by weight, the amount of said highly saturated elastomer ranging from about 5 to about 55 parts by weight,

said 1-olefin polymer selected from the group consisting of a homopolymer and a copolymer made from 1-olefin monomers having from 2 to about 20 carbon atoms, said homopolymer or said copolymer having a melting point of at least 90° C.,

wherein said highly saturated elastomer is selected from the group consisting of hydrogenated polymer made from dienes having from 4 to 10 carbon atoms and a hydrogenated diblock or triblock copolymer made from conjugated dienes having from 4 to 10 carbon atoms and vinyl substituted aromatics having from 8 to 12 carbon atoms, the amount of said saturation of said elastomer being at least 70%, and

mixing said blend at a temperature at or above the melting point of said crystalline 1-olefin polymer so that a reprocessable thermoplastic elastomer blend is formed.

4,343,919

ADDITION POLYMERIZABLE POLYETHYLENIC POLYMERS HAVING PENDANT ACRYLOYL URETHANE GROUPS

Nancy B. Tefertiller, and Robert F. Harris, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1980, Ser. No. 128,422

Int. Cl.³ C08F *120/36*

U.S. Cl. 525—278 **8 Claims**

1. A radiation curable coating formulation comprising

(a) a polymer of 2-isocyanatoethyl methacrylate, the isocyanate moieties of which have been reacted with a hydroxyalkyl acrylate; and

(b) a photoinitiator sufficient to initiate radiation cure of the formulation upon exposure to actinic radiation.

4,343,920

POLYMERIC POLYDENTATE COMPLEXONS AND A METHOD FOR THEIR PREPARATION

Jaroslav Kahovec, Prague, Czechoslovakia, assignor to Cexkoslovenska akademie ved, Prague, Czechoslovakia

Filed Dec. 19, 1980, Ser. No. 218,125

Claims priority, application Czechoslovakia, Dec. 22, 1979, 9318-79

Int. Cl.³ C08F *8/30*

U.S. Cl. 525—328.2 **2 Claims**

2. The preparation of the polymeric complexons of general formulae I and II, wherein the polymeric compound Ⓟ -XH, where Ⓟ is a polymeric skeleton and X is —O— or

while R is H, alkyl with 1–6 carbon atoms, phenyl or phenyl substituted with 1–2 alkyl or alkoxyl groups with 1–6 carbon atoms, reacts with 4,4'-ethylene-bis(2,6-morpholinedione) in the presence of an inert solvent.

4,343,921

ADHESIVE COMPOSITION

Gerhard Piestert, Schriesheim, Fed. Rep. of Germany, assignor to USM Corporation, Farmington, Conn.

Filed Nov. 2, 1979, Ser. No. 90,513

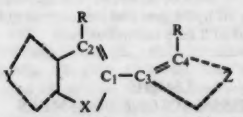
Claims priority, application United Kingdom, Nov. 6, 1978, 43370/78

Int. Cl.³ C08F *4/00, 20/20, 20/26*

U.S. Cl. 525—310 **21 Claims**

1. An adhesive composition formed by combining two parts, one part including one or more polymerizable materials comprising one or more acrylate or methacrylate groups per molecule, a source of free radicals comprising an organic peroxide, hydroperoxide, perester or peracid, and the other part includes an activator which can cooperate with the source of free radicals to initiate addition polymerization of the polymerizable materials and where the said activator comprises an organic material having a structure shown in FORM 1 below:

FORM 1



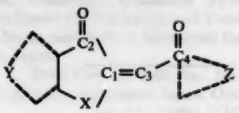
where X represents a nitrogen or sulfur atom;

Y represents the atoms necessary to complete a substituted or unsubstituted aromatic ring system;

Z represents the atoms necessary to complete a substituted or unsubstituted ring system or a substituted or unsubstituted five membered heterocyclic ring system in which C_3 is bonded to a nitrogen or sulfur atom and

R represents the same or different substituent which under adhesive forming conditions and in the presence of free radicals provide a structure of FORM 2 below:

FORM 2



4,343,922

POLYMERS CONTAINING CHEMICALLY BONDED METAL ATOMS

Robert C. Shaffer, Playa del Ray, Calif., assignor to HITCO, Irving, Calif.

Division of Ser. No. 84,310, Dec. 12, 1979, which is a continuation-in-part of Ser. No. 893,622, Apr. 5, 1978, Pat. No. 4,185,043, which is a continuation-in-part of Ser. No. 714,403, Aug. 16, 1976, Pat. No. 4,087,482. This application Jul. 31, 1980, Ser. No. 174,188

Int. Cl.³ C08G *79/00, 63/00;* C08L *85/00*

U.S. Cl. 525—389 20 Claims

1. A polymer containing tungsten and/or molybdenum metal atoms chemically bonded in the polymer chain obtained by reacting either a saturated or an ethylenically unsaturated dicarboxylic acid or anhydride with a metal complex which is a reaction product of tungsten carbonyl and/or molybdenum carbonyl with pyrrolidine.

4,343,923

PROCESS FOR REDUCING THE ACID DYE UPTAKE OF POLYAMIDE TEXTILE MATERIALS WITH N-ACYLIMIDAZOLE COMPOUND

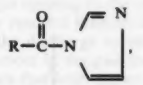
Ronald S. Lenox, Lancaster, and Anne L. Schwartz, Columbia, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Aug. 7, 1980, Ser. No. 176,017

Int. Cl.³ C08G *69/48*

U.S. Cl. 525—426 19 Claims

1. A process for significantly decreasing the acid dye uptake of a polyamide article having free amine end groups which polyamide article is susceptible to acid dyes which comprises reacting the polyamide article with a compound of the formula:



wherein R represents alkyl, haloalkyl, aryl, cycloalkyl, alkynyl, alkenyl, or a heterocyclic radical.

4,343,924

STABILIZED PHENOLIC RESINS FOR USE IN VAPOR PERMEATION CURING

Gary L. Linden, Upper Arlington, Ohio, assignor to Ashland Oil, Inc., Dublin, Ohio

Filed Sep. 14, 1981, Ser. No. 302,184

Int. Cl.³ C08G *8/28, 8/32, 8/36;* C08J *5/12*

U.S. Cl. 525—440 14 Claims

1. A method for coating a substrate with a film of a coating composition rapidly curable at room temperature in the presence of a vaporous tertiary-amine catalyst and possessing a pot life of at least 4 hours in an open pot, which comprises:

(A) coating said substrate with said film of said coating composition, said coating composition comprising:

(1) a phenol-functional condensation product of

(a) a phenol-aldehyde reaction product bearing a plurality of methylol and phenol groups, and

(b) a polyol, polycarboxylic acid, or polyepoxide, said condensation product then being reacted with a selective transmethylolating agent for substantially transforming residual methylol groups into non-active hydrogen groups, said condensation product also being rid of substantially all water content;

(2) a multi-isocyanate cross-linking agent, where the molar ratio of phenol groups of said condensation product to said isocyanate groups of said cross-linking agent ranges between about 1:1 and 1:2; and

(3) an organic solvent for said condensation product and for said cross-linking agent; and

(B) exposing said coated substrate to a vaporous tertiary-amine catalyst to rapidly cure said film at about room temperature.

4,343,925

COATING COMPOSITIONS BASED ON POLYOL-CONTAINING FILM FORMING COMPONENTS AND ORGANIC ALCOHOLIC REACTIVE DILUENTS

Wen-Hsuan Chang; James B. O'Dwyer, both of Gibsonia, and John R. Peffer, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1979, Ser. No. 101,397

Int. Cl.³ C08L *67/00*

U.S. Cl. 525—440 23 Claims

4. A coating composition capable of liquid application to a substrate, the vehicle portion of the composition consisting essentially of:

(a) from about 60 percent to about 97 percent of a curable film forming component, wherein said component is (1) an organic polyol having a hydroxyl equivalent weight of from about 40 to about 500 and a hydroxyl functionality of at least 2.0 and (2) a crosslinking agent, and the ratio of the polyol to the crosslinking agent ranges from about 80:20 to about 20:80; and

(b) from about 3 percent to about 40 percent of an organic reactive diluent capable of chemically combining with the curable film forming component, said reactive diluent having one primary or secondary hydroxyl group and selected from the group consisting of amides, esters, urethanes, ureas, sulfur-containing compounds and mixtures thereof, and further characterized by having a retained solids value of greater than about 80 percent, a hydroxyl equivalent weight of from about 180 to about 800 and a liquid viscosity of less than about 10 poises at 60° C.

4,343,926

FLUIDIZED BED TERPOLYMERIZATION OF ETHYLENE, PROPYLENE AND NON-CONJUGATED DIENE

Francois Caumartin; Jean L. Vidal, and Pierre Mangin, all of Martigues, France, assignors to NAOHTACHIMIE Societe Anonyme, Courbevoie, France

Filed Jul. 2, 1980, Ser. No. 165,359

Claims priority, application France, Jul. 6, 1979, 79 17547

Int. Cl.³ C08F *2/34*

U.S. Cl. 526—68 10 Claims

1. A process for the production of elastomeric terpolymers of ethylene, propylene and a non-conjugated diene wherein the proportions by weight of units derived from propylene and units derived from diene are respectively from 25 to 80% and from 0.5 to 5%, the process being characterized as a continuous process in that a gaseous mixture of ethylene, propylene and the diene is brought momentarily into contact in a dry fluidized state, in the absence of liquid hydrocarbon, with a catalytic system comprising

one or more solid compounds of titanium produced by the reduction of titanium tetrachloride by means of an or-

gano-aluminum compound at a temperature of from −10° to 80° C. and then by heating of the resulting precipitate, in the presence of an excess of titanium tetrachloride at a temperature up to 115° C., both steps being carried out in the presence of an electron donor compound,

one or more organo-metallic compounds of the mean formula $AlR_xZ_{(3-x)}$, wherein R represents an alkyl group containing from 2 to 12 carbon atoms, Z represents a hydrogen atom or a halogen and X represents an integer or a fraction which can be of any value of from 1 to 3,

recycling the unreacted gaseous monomers after removal of entrained solid particles,

adding fresh monomer to the recycled unreacted monomers, in an amount to maintain relatively constant the ratio of the monomers brought into contact with the catalyst, and which includes the step of introducing a prepolymer for fluidization with the monomer, in which the prepolymer contains the catalyst.

4,343,927

HYDROPHILIC, SOFT AND OXYGEN PERMEABLE COPOLYMER COMPOSITIONS

Sing-Hsiung Chang, 6, Buckskin Heights Dr., Danbury, Conn. 06810

Continuation-in-part of Ser. No. 740,128, Nov. 8, 1976, Pat. No. 4,182,822. This application Jul. 17, 1978, Ser. No. 925,640

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.[3] **C08F** *20/10, 26/06, 30/08, 220/26*

U.S. Cl. 526—262 **11 Claims**

1. A composition of matter specially adapted for use as a prosthetic device having the characteristics of increased hydrophilicity, and oxygen permeability, said composition being a copolymer of comonomers consisting essentially of:

(A) about 15 to about 65% by weight of at least one amide group containing monomer being selected from a group consisting essentially of:

(a) heterocyclic amide group containing monomers consisting essentially of:

(1) N-(olefin containing group)-2-pyrrolidone,

(2) N-(olefin containing group)-2-piperidone,

(3) N-(olefin containing group)-2-imidazolidone, and

(4) N-(olefin containing group) succinimide,

wherein said olefin containing group is selected from a group consisting essentially of vinyl, acryloxy, methacryloxy, acrylatoalkyl, methacrylatoalkyl, acrylamidoalkyl and methacrylamidoalkyl groups, wherein the alkyl group contains from one to 4 carbon atoms, and

(b) noncyclic amide group containing monomers consisting essentially of N-alkyl acrylamide, N-alkyl methacrylamide, N,N-dialkyl acrylamide and N,N-dialkyl methacrylamide, wherein the alkyl group is individually selected from a group consisting of unsubstituted and substituted monovalent hydrocarbon radicals having from one to 6 carbon atoms, and

(B) about 10 to about 75% by weight of at least one organosilicon compound, wherein the essential constituent units of each molecular compound have the formulas:

$$M,\ CH_2{=}CRCOO(CH_2)_nR'_aSiO_{\frac{3-a}{2}} \text{ and}$$

$$N,\ R''_bSiO_{\frac{4-b}{2}}$$

wherein each molecular compound contains one M group and the molar ratio of from about 1 to 99 to about 99 to 1; R is selected from a group consisting of hydrogen and methyl group; R' and R'', which may be the same or different, are monovalent hydrocarbon groups selected from a group consisting of C_1–C_4 alkyl groups, cyclohexyl groups and phenyl groups; n is an integer of from one to three inclusive; a is an integer selected from a range of 0 to 2 inclusive and b is an integer selected from a range of zero to three inclusive.

4,343,928

TRANSPARENCIES PRODUCED FROM EPOXY RESINS CURED WITH ADDUCTS OF BOROXINES AND INTERLAYERS OF MERCAPTAN RESINS

John R. Uram, Jr., Glendale, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886, and a continuation-in-part of Ser. No. 204,424, Nov. 6, 1980, which is a continuation-in-part of Ser. No. 70,390, Aug. 28, 1979, Pat. No. 4,294,886. This application Feb. 5, 1981, Ser. No. 232,054

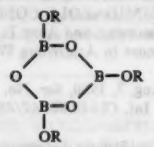
Int. Cl.[3] **C08G** *59/40*

U.S. Cl. 528—108 **11 Claims**

1. A transparent composition curable to a product having resistance to intense heat, comprising: p1 a transparent blend having

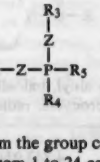
(a) from about 80 to about 100 parts by weight of an epoxy resin;

(b) from about 5 to about 30 parts by weight of a boroxine having the formula:



where R is a compound having from 1 to 18 carbon atoms, and

(c) from about 1 part to about 40 parts by weight of an organic phosphorus compound having the following formula:



where R_3 is selected from the group consisting of hydrocarbon radicals having from 1 to 24 carbon atoms, halo-substituted organic radicals having from 1 to 24 carbon atoms, and multihalo-substituted organic radicals having from 1 to 24 carbon atoms; and where R_3 may be the same or different radicals

where R_4 is selected from the group consisting of all the radicals of R_3, oxygen, and radicals of the formula: —O—R_6, where R_6 is selected from the group consisting of all the radicals of R_3, organo-phosphorus polymeric radicals, and organo-phosphorus esters;

where R_5 is selected from the group consisting of hydrogen, hydroxy, oxygen, sulfur, halogens or no radical at all; and

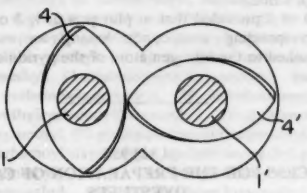
where Z is selected from the group consisting of oxygen, sulfur, or no radical at all.

4,343,929

PROCESS FOR CONTINUOUSLY POLYMERIZING TRIOXANE

Akitoshi Sugio, Ohmiya; Kazuyoshi Taka, Yokkaichi; Akira Amemiya, Tokyo; Tomotaka Furusawa, Matsudo; Mutsuhiko Takeda, Yokkaichi; Katsumasa Tanaka, Yokkaichi; Toshikazu Umemura, Yokkaichi, and Yoshihiro Ono, Yokkaichi, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Oct. 23, 1980, Ser. No. 200,065
Claims priority, application Japan, Oct. 23, 1979, 54-135868
Int. Cl.³ C08G *2/10*
U.S. Cl. 528—241 24 Claims



1. In a process for producing a polyacetal homopolymer or copolymer which comprises continuously feeding a liquid starting mixture containing molten trioxane and a catalyst and optionally a comonomer through a feed opening of a reactor, said reactor being a continuously stirring type mixer comprising a hollow barrel having in spaced-apart relationship said feed opening for the starting materials and a discharge opening for the reaction product, said barrel having a cross-sectional surface corresponding to two overlapping eccentric circles having the same diameter, a jacket provided on the periphery of the barrel for temperature control, and stirring shafts disposed within the hollow barrel parallel to each other and extending longitudinally of the barrel through the central parts of said circles, said stirring shafts having a plurality of plate-like paddles fixed thereto in such a manner that the paddles fixed to one stirring shaft are kept in contact with each other, the cross-section of each of said paddles taken perpendicularly of the axial direction of the stirring shaft having a shape of a convex lens, an ellipse or a quasipolygon inscribing a phantom circle at each vertex, one of said paddles facing another paddle fixed to the other stirring shaft and said one paddle being positioned such that it rotates while the edges thereof keep a slight clearance from the inner surface of the barrel and the other paddle; polymerizing the starting mixture while moving it toward the discharge opening by the rotation of the paddles; and withdrawing the reaction product in the form of a finely divided solid from the discharge opening; the improvement wherein the arrangement of the paddles is changed continuously or stepwise such that with respect to one paddle on the same stirring shaft, a paddle adjacent thereto on the discharge opening side of the reactor is deviated by an angle of less than 180° in a direction opposite to the rotating direction of the stirring shaft, so that the transportability of the reaction mixture becomes progressively smaller from the feed opening toward the discharge opening of the reactor.

4,343,930

POLYMERIZED POLYOLS OF TETRAHYDROPYRIMIDINES

Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Sep. 29, 1980, Ser. No. 192,128
Int. Cl.³ C08G *12/28*
U.S. Cl. 528—252 17 Claims

1. Polymerized methylol derivatives of 2,3,4,5-tetrahydropyrimidines.

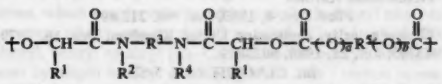
4,343,931

SYNTHETIC ABSORBABLE SURGICAL DEVICES OF POLY(ESTERAMIDES)

Thomas H. Barrows, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 17, 1979, Ser. No. 103,915
Int. Cl.³ C08G *63/68*
U.S. Cl. 528—291 12 Claims

1. A body absorbable polymeric material comprising a plurality of units of the general formula:



in which R^1 is hydrogen or methyl;

R^3 and R^5 are identical or different and are selected from the group consisting of the following, which are linear or branched, alkylene, alkylene having 1 or 2 nonadjacent catenary oxygen or sulfur atoms, alkenylene, cycloalkylene and arylene; said members of the group having up to 25 carbon atoms in the cyclic compounds and from 2 to 25 carbon atoms in the non-cyclic compounds;

R^2 and R^4 are hydrogen or alkyl having 1 to 4 carbon atoms or R^2 and R^4 together are linear or branched alkylene having one to four carbons forming with N-R^3-N a heterocyclic group having 5 or 6 ring atoms; and a and b are independently zero or one.

4,343,932

UNSATURATED POLYESTER COMPOSITION

Jacob J. Prooi, Zwolle; Waltherus J. Sep, Doorn, and Wilhelmina Westerhof, Zwolle, all of Netherlands, assignors to Internationale Octrooi Maatschappij "Octropa" BV, Rotterdam, Netherlands

Filed Dec. 10, 1980, Ser. No. 214,981
Claims priority, application Netherlands, Dec. 14, 1979, 79 09040
Int. Cl.³ C08F *283/00;* C08G *63/52*
U.S. Cl. 528—303 10 Claims

1. Unsaturated polyester having an acid value between 5 and 60, and a hydroxyl value between 0 and 30, the molecules of which have been built up predominantly from groups derived from a diol component and a dicarboxylic acid component, characterized in that terminal 1,2-alkene dicarboxylic acid is present in an amount of 1–25 mol-percent, calculated on the total amount of dicarboxylic acid, and that the dicarboxylic acid groups in the chain consist for 1 to 8 mol-percent of trans-1,2-alkene dicarboxylic acid.

4,343,933

PROCESS FOR THE ANIONIC POLYMERIZATION OF 2-PYRROLIDONE WITH FAST FREEZING STEP

Jan Roda, and Jaroslav Kralicek, both of Prague, Czechoslovakia, assignors to Vysoka skola chemicko-technologicka, Prague, Czechoslovakia

Filed Sep. 26, 1980, Ser. No. 191,147
Claims priority, application Czechoslovakia, Dec. 5, 1979, 8446-79
Int. Cl.³ C08G *69/24*
U.S. Cl. 528—312 5 Claims

1. A process for producing fiber forming poly 2-pyrrolidone by the anionic polymerization of 2-pyrrolidone monomer, comprising

(1) forming a polymerization mixture of the monomer, anionic polymerization catalyst and carbon dioxide activator,

(2) polymerizing said monomer at a temperature of 25° to 70° C. for 1 to 100 minutes,

(3) quickly cooling the resulting polymerization mixtures to a temperature of −50° to −190° C. for 1 to 100 minutes,

(4) thereafter completing the polymerization at a temperature of 15° to 75° C.

4,343,934

CRYSTALLINE 4,1',6'-TRICHLORO-4,1',6'-TRIDEOXY-GALACTOSUCROSE

Michael R. Jenner, Pangbourne, and David Waite, Reading, both of England, assignors to Talres Development (N.A.) N.V., Netherlands Antilles

Filed Dec. 4, 1980, Ser. No. 212,897

Claims priority, application United Kingdom, Dec. 18, 1979, 7943495; Jul. 21, 1980, 8023819

Int. Cl.³ C07H *3/04, 5/02*

U.S. Cl. 536—122 **7 Claims**

1. Crystalline 4,1',6'-trichloro-4,1',6'-trideoxygalactosucrose.

4,343,935

CHIRAL COMPOUNDS

Dale A. Laidler, Huntington, and David J. Milner, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

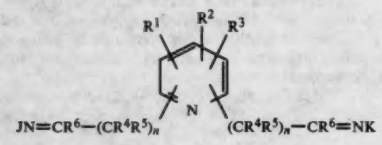
Filed Jul. 8, 1980, Ser. No. 166,837

Claims priority, application United Kingdom, Jul. 13, 1979, 7924520

Int. Cl.³ C07D *213/53*

U.S. Cl. 542—414 **15 Claims**

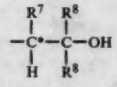
1. A chiral Schiff base according to the general formula:



wherein R^1, R^2 and R^3, which may be the same or different, are hydrogen, alkyl, aralkyl, aryl, alkaryl, hydroxyl, OR^{16}, $OCOR^{16}$, CHO, COR^{16}, CO_2R^{16}, CN, $CONH_2$, NH_2, NHR^{16}, NR_2^{16}, $NHCOR^{16}$, NO_2, SH, SR^{16}, SOR^{16}, SO_3H, SO_3R^{16} wherein R^{16} is alkyl, aralkyl or aryl, and halogen,

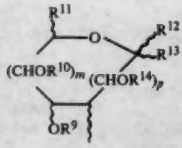
R^4 and R^5, which may be the same or different, are hydrogen, lower alkyl,

R^6 is hydrogen, alkyl, aralkyl, aryl or alkaryl, n is 0, 1 or 2 and J and K, which may be the same or different, are groups of the formulae:



in which C* is an asymmetric carbon atom, R^7 and R^8 which may be the same or different, are alkyl, aralkyl, aryl or alkaryl

or



in which at least the ring carbon atom to which the iminyl nitrogen atom is attached is asymmetric, at least one of the carbon atoms adjacent the said carbon atom bears a hydroxyl group, R^9 and R^{14}, which may be the same or different, are hydrogen or lower alkyl,

R^{10} is hydrogen or lower alkyl or, where m is 1 and R^{11} is $—CH_2OR^{15}$, OR^{10} and OR^{15} together form an acetal residue,

R^{11} is hydrogen or $—CH_2—OR^{15}$ in which R^{15} is hydrogen, lower alkyl or where m is 1, OR^{10} and OR^{15} together form an acetal residue,

R^{12} is hydrogen or $—CH_2—OR^{15a}$ in which R^{15a} is hydrogen, or a lower alkyl,

R^{13} is hydrogen or OR^1,

provided that both R^{12} and R^{13} are not hydrogen,

m is 0, 1 or 2

p is 0 or 1 provided that m plus p is 0, 1, 2 or 3; and the corresponding compounds having an oxygen atom attached to the nitrogen atom of the pyridine ring.

4,343,936

PROCESS FOR THE PREPARATION OF CATIONIC DYESTUFFS

Harald Gleinig, Odenthal; Bernd Berger-Lohr, Leverkusen, and Kurt Breig, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

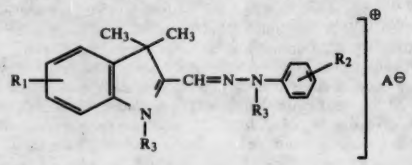
Filed Mar. 19, 1981, Ser. No. 245,411

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013273

Int. Cl.³ C07D *209/40*

U.S. Cl. 542—417 **7 Claims**

1. Process for the preparation of cationic dyestuffs of the general formula



wherein

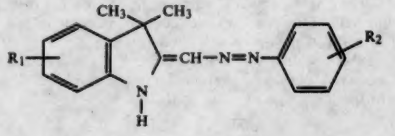
R_1 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, nitro or halogen,

R_2 represents hydrogen, C_1- to C_4-alkyl, C_1- to C_4-alkoxy, halogen or phenylazo,

R_3 represents C_1- to C_3-alkyl and

$A^{\ominus}$ represents an anion,

by reacting azo bases of the general formula



or salts thereof with inorganic or organic acids, with dialkyl sulphates of the general formula

$$(R_3—O—)_2SO_2$$

in the absence of organic solvents and in the presence of water and, if desired, by replacing the alkylsulphate anion with another anion, characterised in that the weight ratio of azo base to water is 100:20–300 and the molar ratio of azo base to dialkyl sulphate is 1:3.5–5.0.

4,343,937
3-SUBSTITUTED-7-METHOXY-7-AMINO-3-CEPHEM-4-CARBOXYLIC ACIDS

Burton G. Christensen, Scotch Plains; Sandor Karady, Elizabeth; Lovji D. Cama, Edison, and Meyer Sletzinger, North Plainfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 149,364, Jun. 2, 1971, Pat. No. 4,297,488. This application Apr. 30, 1980, Ser. No. 145,160
Int. Cl.³ C07D *501/18*
U.S. Cl. 544—021 **4 Claims**

1. The compound 3-A-7-methoxy-7-amino-cephem-4-carboxylic acid wherein A is methyl, hydroxymethyl, chloromethyl, bromomethyl, or fluoromethyl, mercaptomethyl, methoxymethyl, n-propoxymethyl, methylthiomethyl, acetoxymethyl, propionyloxymethyl, benzoyloxymethyl, (p-chlorobenzoyl)-oxymethyl, (p-methylbenzoyl)oxymethyl, pivaloyloxy-methyl, (1-adamantyl)carboxymethyl, butanoyloxymethyl, carbamoyloxymethyl, (N-methylcarbamoyl)oxymethyl, (N-ethylcarbamoyl)oxymethyl, [N-(2-chloroethyl)-carbamoyl]oxymethyl, (N-phenylcarbamoyl)oxymethyl, (N-p-sulfophenylcarbamoyl)oxymethyl, p-carboxymethyl-phenylcarbamoyloxymethyl, methoxycarbonyloxymethyl, isobutanoyloxymethyl, cyclobutylcarbonyloxymethyl, carbamoylthiomethyl, (ethoxythiocarbonyl)thiomethyl, (n-propoxythiocarbonyl)thiomethyl, (cyclopentanoxythiocarbonyl)thiomethyl, N,N-diethylthiocarbamoylthiomethyl, N-methylpiperazinium-1-thiocarbonylthiomethyl, N,N-dimethylpiperzinium-1-thiocarbonylthiomethyl, 2-furoylthiomethyl, isothiouroniummethyl, (5-methyl-1,3,4-thiadiazol-2-yl)-thiomethyl, p-tolylsulfonylthiomethyl, mesyloxymethyl, 1-methyl-1,2,3,4-tetrazolyl-5-thiomethyl, tosyloxymethyl, sulfamoyloxymethyl, 1-naphthoyloxymethyl, 2-furylacetoxymethyl, cinnamoyloxymethyl, p-hydroxycinnamoyloxymethyl, p-sulfocinnamoyloxymethyl and 1R:2S-epoxypropylphosphonyloxymethyl, or pyridinium methyl; and the carboxylic acid protecting derivatives thereof wherein the derivative group is methyl, t-butyl, trichloroethyl, allyl, propargyl, benzyl, diphenylmethyl, o-nitrobenzyl, 3,5-dinitrobenzyl, p-methoxybenzyl, acetoxymethyl, pivaloyloxymethyl, phenacyl, trichloroethoxy carbonyl, trimethylsilyl or tributyltin.

4,343,938
7-[Dα-(COUMARIN-3-CARBOXAMIDO)ARYLACETAMIDO]-CEPHALOSPORANIC ACIDS OR SALTS

Martin L. Sassiver, Monsey, N.Y., and James H. Boothe, Montvale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 889,675, Mar. 24, 1978, Pat. No. 4,317,774. This application Sep. 23, 1981, Ser. No. 304,757
Int. Cl.³ C07D *501/56*
U.S. Cl. 544—27 **2 Claims**

1. A compound selected from the group consisting of 7-[Dα-(coumarin-3-carboxamido)phenylacetamido]cephalosporanic acid and the pharmacologically acceptable cationic salts thereof.

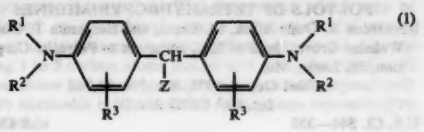
2. A compound selected from the group consisting of 7-[Dα-(coumarin-3-carboxamido)phenylacetamido]-3-[(1-methyltetrazole-5-thio)methyl]ceph-3-em-4-carboxylic acid and the pharmacologically acceptable cationic salts thereof.

4,343,939
GLYCOLIC ACID ESTERS AND AMIDES OF BIS(P-DISUBSTITUTEDAMINOPHENYL)CARBINOL

Frank F. Cesark, Bridgewater; Robert J. Manfre, Somerville, and Daniel W. Thomas, Bridgewater, all of N.J., assignors to American Cyanamid Company, Stamford, Conn.

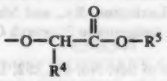
Filed Apr. 22, 1981, Ser. No. 256,353
Int. Cl.³ C07D *295/18*
U.S. Cl. 544—165 **6 Claims**

1. A compound represented by the Formula (1):

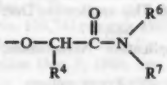


(1)

wherein R^1 and R^2, which may be the same or different, represent hydrogen, alkyl containing from about 1 to 4 carbon atoms, which may be substituted by a nitrile, hydroxyl or a 2 to 8 carbon alkoxy group, phenyl or alkyl (C_1–C_4) substituted phenyl, benzyl or alkyl (C_1–C_4) substituted benzyl; R^3 represents hydrogen or alkyl containing about 1 to 5 carbon atoms; and Z represents an ester or amide group represented by Formula (2) and (3), respectively:



(2)



(3)

wherein R^4 represents hydrogen, alkyl containing about 1 to 5 carbon atoms, phenyl or alkyl (C_1–C_4) substituted phenyl, or benzyl or alkyl (C_1–C_4) substituted benzyl; R^5 represents alkyl containing about 1 to 12 carbon atoms, either in a straight or branched chain, which chain may be interrupted by a hetero atom, phenyl or alkyl (C_1–C_4) substituted phenyl, or benzyl or alkyl (C_1–C_4) substituted benzyl; R^6 and R^7, which may be the same or different, represent hydrogen, alkyl containing about 1 to 12 carbon atoms in either a straight or branched chain, which chain may be interrupted by a hetero atom, phenyl or alkyl (C_1–C_4) substituted phenyl, benzyl, or alkyl (C_1–C_4) substituted benzyl, or wherein R^6 and R^7, taken together with the nitrogen atom to which they are attached, combine to form a morpholine ring.

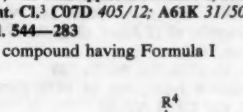
4,343,940
ANTI-TUMOR QUINAZOLINE COMPOUNDS

William E. Kreighbaum, and William T. Comer, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 11,819, Feb. 13, 1979, Pat. No. 4,314,943. This application Mar. 6, 1981, Ser. No. 241,317
Int. Cl.³ C07D *405/12*; A61K *31/505*; C07D *405/14*
U.S. Cl. 544—283 **3 Claims**

1. A compound having Formula I

Formula I



wherein one of R^6 and R^7 is oxiranylmethyl, and the other is methyl or oxiranylmethyl, and R^2 and R^4 are independently selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, phenyl, substituted phenyl, phenylalkyl having up to 8 carbon atoms, substituted phenylalkyl having up to 8 carbon atoms apart from the substituents, wherein said substituted phenyl and substituted phenylalkyl have one or two ring attached groups independently selected from halogen, methyl, or methoxy groups.

4,343,941
POLYOLS OF TETRAHYDROPYRIMIDINES

Bernardus A. Oude Alink, St. Louis, and Benjamin T. Outlaw, Webster Groves, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Oct. 4, 1979, Ser. No. 81,748
Int. Cl.³ C07D 239/06
U.S. Cl. 544—335 8 Claims

1. Methylol derivatives of 2,3,4,5-tetrahydropyrimidines where there is a methylol substitution at two or more of the following positions:

(1) the ring-N at the 3 position;

(2) the ring carbon at the 5 position; and

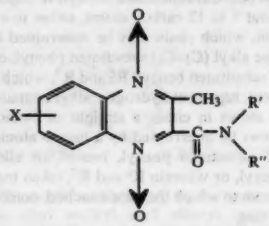
(3) 1 or 2 hydrogens of the α-methyl group at the 6 position.

4,343,942
QUINOXALINE DERIVATIVES

Costas H. Issidorides, Lexington, Ky., and Makhluf J. Haddadin, Beirut, Lebanon, assignors to Research Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 691,252, Dec. 18, 1967, abandoned, which is a continuation-in-part of Ser. No. 592,729, Nov. 8, 1966, abandoned. This application Dec. 9, 1969, Ser. No. 883,577
Claims priority, application Netherlands, Nov. 2, 1967, 6714882
Int. Cl.³ C07D 241/40
U.S. Cl. 544—354 17 Claims

1. A compound of the formula:



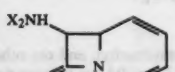
wherein X is trifluoromethyl, sulfonamide, N-methylsulfonamide and N,N-dimethylsulfonamide; and each of R′ and R″ is selected from the group consisting of hydrogen and lower alkyl.

4,343,943
CEPHALOSPORIN ANALOGS

Tadashi Hirata, Yokohama; Hiromitsu Saito, and Nobuhiro Nakamizo, both of Machida, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

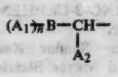
Filed Jun. 25, 1979, Ser. No. 51,758
Claims priority, application Japan, Jun. 24, 1978, 53-7690
Int. Cl.³ C07D 211/80
U.S. Cl. 546—183 33 Claims

1. Cephalosporin analogs represented by the formula



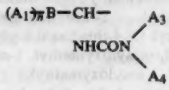
wherein X_2 represents an acyl group represented by the formula X^1CO wherein X^1 represents:

(a) cyanomethyl group or a group represented by the formula



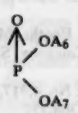
wherein B represents an unsaturated six membered carbocycle which is selected from cyclohexenyl group, cyclohexadienyl group and phenyl group or a five or six membered heterocycle selected from the groups consisting of furyl group, thienyl group, pyrrolyl group, thiazolyl group, oxazolyl group, isothiazolyl group, isoxazolyl group, imidazolyl group, pyrazolyl group, triazolyl group, tetrazolyl groups, pyridinyl group, pyrimidinyl group, pyrazinyl group, pyridazinyl group, triazinyl group and 5,6-dihydro-1,4-dithiin-2-yl group, A_1 represents a substituent which is selected from hydrogen atom, hydroxyl group, a lower alkoxy group having 1 to 4 carbon atoms, a halo group, nitro group, amino group, aminomethyl group, methylsulfonamido group and a lower acyloxy group having 2 to 4 carbon atoms selected from the groups consisting of acetyloxy group, propyloxy group and butyloxy group, n is a number from 0 to 5, and A_2 represents hydrogen atom, amino group, hydroxyl group, carboxyl group or sulfoxyl group,

(b) a group represented by the formula

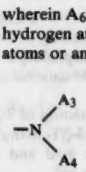


wherein A, B and n have the same significance as defined above, A_3 and A_4 are the same or different and represent (1) hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, (2) a group represented by the formula

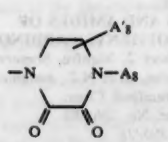
wherein A_5 represents a lower alkyl group having 1 to 4 carbon atoms or (3) a group represented by the formula



wherein A_6 and A_7 are the same or different and represent hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms or an alkali metal or

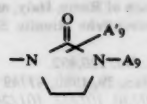


also represents a group represented by the formula



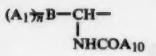
wherein A_8 and A'_8 are the same or different and represent

hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms or a group represented by the formula

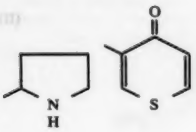


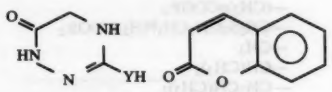
wherein A_9 represents hydrogen atom, a lower alkyl group having 1 to 4 carbon atoms, methylsulfonyl group or furfurylideneimimo group and A'_9 represents hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms,

(c) a group represented by the formula

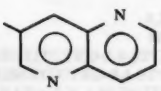


wherein A_1, B and n have the same significance as defined above, and A_{10} represents an aryl group or a mono-, bi- or tricyclic hetercycle(s) selected from a group represented by the formula

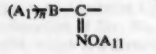




wherein Y is an oxygen or sulfur atom and

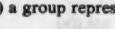


(d) a group represented by the formula

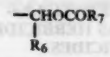


wherein A_1, B and n have the same significance as defined above and A_{11} represents hydrogen atom, a lower alkyl group having 1 to 6 carbon atoms, a lower alkenyl group having 2 to 6 carbon atoms, a lower alkinyl group having 2 to 6 carbon atoms, a cycloalkyl group having 3 to 6 carbon atoms selected from the groups consisting of cyclopropyl group, cyclobutyl group and cyclohexyl group, those groups being unsubstituted or substituted with substituents selected from carboxyl group, cyano group, a halo group, carbamoyl group and a lower alkyloxycarbonyl group having 1 to 4 carbon atoms,

(e) a group represented by the formula



wherein B_1 represents trifluoromethyl group, cyanomethyl group, a group represented by the formula $(A_1)_n$B- wherein A_1, n and B have the same significance as defined above and Z represents oxygen atom or sulfur atom, R_1 represents hydrogen atom or a protecting group of carboxylic acid, which is selected from an alkyl group having 1 to 5 carbon atoms, a halogenated alkyl group having 1 to 5 carbon atoms, an aryl methyl group having 7 to 20 carbon atoms which may be substituted on the phenyl ring, a substituted silyl group, wherein the substituent is selected from a lower alkyl group having 1 to 5 carbon atoms and an aryl group having 6 to 10 carbon atoms and a group enzymatically or nonenzymatically readily eliminable in vivo selected from groups represented by the formula



wherein R_6 represents a hydrogen atom or a lower alkyl group having 1 to 6 carbon atoms, and R_7 represents a lower alkyl group having 1 to 6 carbon atoms, a lower alkoxy group having 1 to 6 carbon atoms or a phenyl group and the pharmaceutically acceptable salts thereof.

4,343,944

INDOLINOSPIROPYRANE COMPOUNDS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

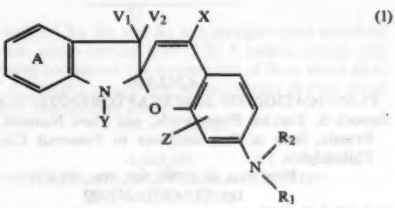
Division of Ser. No. 109,741, Jan. 4, 1980, which is a division of Ser. No. 761,042, Jan. 21, 1977, Pat. No. 4,210,591. This application Dec. 5, 1980, Ser. No. 213,298

Claims priority, application Switzerland, Jan. 30, 1976, 1175/76; Sep. 7, 1976, 11326/76

Int. Cl.³ C07D *213/04, 209/04*

U.S. Cl. 546—15 **5 Claims**

1. An indolinospiropyrane compound of the formula



(1)

wherein

R_1 represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower alkoxy or lower alkyl-carbonyloxy, or cyclopentyl or cyclohexyl, or phenyl or benzyl which are unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

R_2 represents hydrogen, alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, hydroxyl, cyano, lower alkoxy or lower alkyl-carbonyloxy, or cyclopentyl or cyclohexyl, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

X represents a thienyl, furyl, pyrrolyl, pyridyl, benzothiophene, indolyl, quinolinyl or coumarin radical which is unsubstituted or substituted by halogen, hydroxyl, cyano, nitro, lower alkyl, lower alkoxy or lower alkoxy-carbonyl,

Y represents alkyl which has at most 12 carbon atoms and is unsubstituted or substituted by halogen, cyano or lower alkoxy, or benzyl which is unsubstituted or substituted by halogen, nitro, lower alkyl or lower alkoxy,

Z represents hydrogen, halogen or lower alkyl and

V_1 and V_2 each represent lower alkyl, cyclopentyl, cyclohexyl or benzyl, or conjointly represent alkylene of 4 or 5 carbon atoms, and the ring A is unsubstituted or substituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxy-carbonyl, phenoxy,

amino, lower alkylamino or N-lower alkyl-carbonylamino.

4,343,945

5-BENZAMIDO-3-TRICHLOROMETHYL-1,2,4-THIADIAZOLES AND THEIR USE AS HERBICIDES, FUNGICIDES AND INSECTICIDES

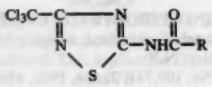
Walter A. Gay, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 6,302, Jan. 23, 1979. This application Aug. 13, 1981, Ser. No. 292,451

Int. Cl.³ A01N *43/82*; C07D *285/08*

U.S. Cl. 548—128 **7 Claims**

1. A compound of the formula:



wherein R is phenyl which is unsubstituted or substituted by at least one member selected from the group consisting of lower alkyl having 1 to 4 carbon atoms, lower alkoxy having 1 to 4 carbon atoms, nitro and halo.

4,343,946

PURIFICATION OF 2-MERCAPTOBENZOTHIAZOLE

Sameeh S. Toulan, Phoenixville, and Piero Nannelli, King of Prussia, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jun. 23, 1980, Ser. No. 161,824

Int. Cl.³ C07D *277/72*

U.S. Cl. 548—177 **4 Claims**

1. In a process for purifying crude molten 2-mercaptobenzothiazole, prepared by reacting aniline carbon disulfide and sulfur at elevated temperature and pressure, in which the purification includes the steps of separating dissolved alkali metal salt of 2-mercaptobenzothiazole from undissolved impurities, treating the dissolved alkali metal salt of 2-mercaptobenzothiazole with an excess of a non-oxidizing mineral acid to precipitate a slurry of purified 2-mercaptobenzothiazole, separating the purified 2-mercaptobenzothiazole solids from the slurry to obtain 2-mercaptobenzothiazole solids, washing the solids with water, and drying the purified 2-mercaptobenzothiazole, the improvement comprising; forming said dissolved alkali metal salt at 2-mercaptobenzothiazole and said dissolved impurities by the steps of

slowly adding crude molten 2-mercaptobenzothiazole into an aqueous alkali metal hydroxide solution, using vigorous agitation, said alkali hydroxide being at a concentration of about 3 to 20 percent by weight alkali metal hydroxide and the amount of alkali metal hydroxide being at about 5 to 20 percent molar excess based upon the content of the pure 2-mercaptobenzothiazole in the crude molten 2-mercaptobenzothiazole; and

heating, while agitating, the mixture of said crude molten 2-mercaptobenzothiazole and aqueous alkali metal hydroxide solution at a temperature of about 70° to 90° C. for about 0.5 to 4 hours to dissolve the 2-mercaptobenzothiazole as the alkali metal salt.

4,343,947

CARNITINAMIDES OF OPTICALLY ACTIVE AMINOACIDS

Paolo De Witt, and Maria O. Tinti, both of Rome, Italy, assignors to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A., Rome, Italy

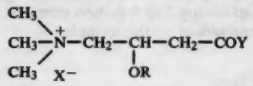
Filed Dec. 29, 1980, Ser. No. 220,492

Claims priority, application Italy, Jan. 29, 1980, 47749 A/80

Int. Cl.³ C07D *233/58*; C07C *101/30, 101/32, 101/26*

U.S. Cl. 548—344 **3 Claims**

1. Carnitinamide having formula:



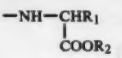
(I)

wherein:

X is a halogen anion;

R is either hydrogen or an acyl radical selected from the group comprising acetyl, propionyl and butyryl;

Y is the residue of an optically active, esterified amino-acid having formula:

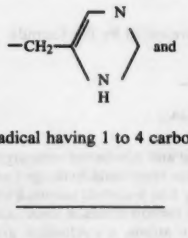


(II)

wherein

R_1 is:

$-CH_2COOR_2$
$-(CH_2)_2COOR_2$
$-CH_2S_2CH_2CH(NH_2)COOR_2$
$-CH_3$
$-CH(CH_3)_2$
$-CH_2CH(CH_3)_2$
$-CH(CH_3)CH_2CH_3$
$-(CH_2)_2SCH_3$
$-C_6H_5$
$-CH_2C_6H_5$
$-CH_2CONH_2$
$-(CH_2)_2CONH_2$



and

R_2 is: an alkyl radical having 1 to 4 carbon atoms.

4,343,948

2,6-DI-TERT-BUTYL-4-METHYL THIOPYRYLIUM SALT

Kouichi Kawamura; Harumi Katsuyama, and Hideo Sato, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

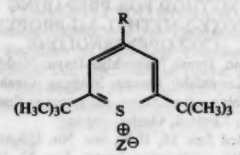
Filed Mar. 28, 1980, Ser. No. 135,030

Claims priority, application Japan, Mar. 28, 1979, 54-37249; Jun. 29, 1979, 54-81523; Jun. 29, 1979, 54-81524; Jun. 29, 1979, 54-81525 R

Int. Cl.³ C07D *333/08, 333/32, 333/34*

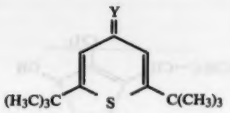
U.S. Cl. 549—13 **7 Claims**

1. A compound of the formula:



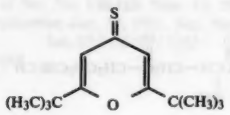
where R is $-SCH_3$ or $-CH_3$ and $Z^{\ominus}$ is an anionic function wherein the acid represented by HZ is a strong acid.

6. A compound of the formula:



where Y is O or S.

7. A compound of the formula:



4,343,949

NOVEL 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-ONES, 2-SUBSTITUTED-3,4-EPOXYCYCLOPENTAN-1-OLS, AND VARIOUS 2-SUBSTITUTED-CYCLOPENTENONES

Karel F. Bernady; Middleton B. Floyd, Jr., both of Suffern; John F. Poletto, Nanuet, all of N.Y.; Robert E. Schaub, Upper Saddle River, and Martin J. Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

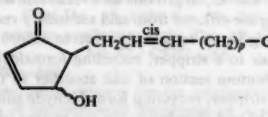
Continuation of Ser. No. 835,613, Sep. 22, 1977, Pat. No. 4,179,574, which is a division of Ser. No. 737,941, Nov. 2, 1976, abandoned, which is a division of Ser. No. 603,467, Aug. 11, 1975, abandoned, which is a division of Ser. No. 355,101, Apr. 27, 1973, abandoned. This application Oct. 12, 1979, Ser. No. 84,237

The portion of the term of this patent subsequent to Dec. 2, 1997, has been disclaimed.

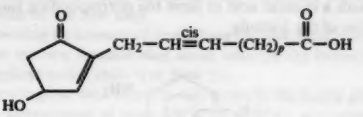
Int. Cl.³ C07C *51/353, 177/00*

U.S. Cl. 562—503 **3 Claims**

1. A method comprising rearranging the compound of the formula:



wherein p is an integer from 3 to 6 inclusive, by treating said compound at room temperature with an aqueous medium having a pH of about 10.3 to 10.6 to provide the compound of the formula:



wherein p is an integer from 3 to 6 inclusive.

4,343,950

RHODIUM-CATALYZED OXIDATION PROCESS FOR PRODUCING CARBOXYLIC ACIDS

Rocco A. Fiato, Charleston, W. Va., and Roy L. Pruett, New Providence, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 159,859, Jun. 6, 1980, Pat. No. 4,273,936, which is a continuation-in-part of Ser. No. 79,884, Sep. 28, 1979, abandoned. This application Jan. 16, 1981, Ser. No. 225,527

Int. Cl.³ C07C *51/235*

U.S. Cl. 562—531 **10 Claims**

1. A process for preparing at least one of a carboxylic acid and its anhydride comprising reacting and oxidizing an aldehyde having from 3 to about 21 carbon atoms with an oxygen-containing gas in the presence of a rhodium complex catalyst consisting essentially of rhodium stabilized by a pentavalent Group V ligand represented by the formula

wherein each of R_1, R_2 and R_3 is a straight-chain saturated hydrocarbon group having from 5 to 8 carbon atoms, said reaction being conducted at a temperature of from about 40 to about 90° C. and at a superatmospheric pressure of from about 1 to about 2 atmospheres gauge.

4,343,951

METHOD FOR THE PREPARATION OF FLUOROANILINE

Michael J. Fifolt, Grand Island, N.Y., and Arthur M. Foster, Birmingham, Mich., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

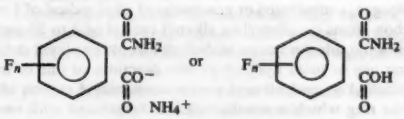
Filed Dec. 29, 1980, Ser. No. 220,671

Int. Cl.³ C07C *85/00, 85/12, 85/24*

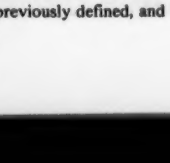
U.S. Cl. 564—414 **19 Claims**

1. A process for the preparation of fluoroaniline compounds comprising the steps of

(A) reacting an ammonium fluorophthalamate or a fluorophthalamic acid of the formula

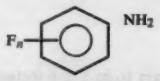


where n is 1 or 2 with an alkali metal or alkali earth metal hypochlorite to form the corresponding fluoroanthranilic acid of the formula



where n is as previously defined, and

(B) decarboxylating the fluoroanthranilic acid by reaction with a mineral acid to form the corresponding fluoroaniline of the formula



where n is as previously defined.

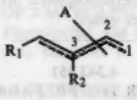
4,343,952

PROCESS FOR THE PREPARATION OF UNSATURATED SULPHONES

Marc Julia, and Lucien Saussine, both of Paris, France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), France

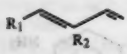
Filed Oct. 8, 1980, Ser. No. 195,003
Claims priority, application France, Oct. 11, 1979, 79 25319
Int. Cl.[3] C07C *147/04*
U.S. Cl. 568—28 14 Claims

1. A process for the preparation of sulphones or of a mixture of sulphones corresponding to Formula I:



I

in which the broken line represents a single double bond in the 1, 2 or 3 position, A represents a substituted sulphonyl radical placed in the alpha position relative to the double bond, the substituents on said sulphonyl radical being selected from the group consisting of alkyl groups of 1 to 30 carbon atoms, alkenyl or alkynyl groups of 2 to 30 carbon atoms, or a phenyl group, said alkynyl, alkenyl, alkynl or phenyl groups being unsubstituted or substituted with one or more hydroxy, oxo, methyl, or cycloalkyl or cycloalkenyl groups containing 6 carbon atoms in the ring which can be unsubstituted or substituted with one or more methyl groups and R_1 and R_2 represent hydrogen, a substituted or unsubstituted alkyl radical of 1 to 30 carbon atoms or, alkenyl or alkynyl radical of 2 to 30 carbon atoms, the substituents on said alkyl, alkenyl or alkynl radicals being one or more hydroxy or oxo functions or one or more cycloalkyl or cycloalkenyl groups containing 6 carbon atoms in the ring which is unsubstituted or substituted with one or more methyl groups, which comprises sulphonating, in the presence of a palladium catalyst and in a solvent, a diene compound corresponding to Formula II:



II

in which R_1 and R_2 have the meanings given above, using at least one agent capable of introducing the substituted sulphonyl radical A selected from sulphinic acids and sulphinates in the presence of a weak acid, and separating the sulphones.

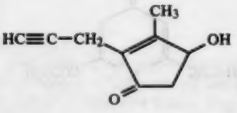
4,343,953

METHOD FOR PREPARING 4-HYDROXY-3-METHYL-2-(2-PROPYNYL)-2-CYCLOPENTENOLONE

Noritada Matsuo, Itami; Nobushige Itaya, Nishinomiya; Kohichi Aketa, Kawanishi; Osamu Magara, Osaka, and Toshio Nishioka, Ashiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

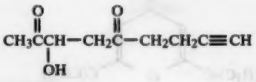
Filed Jun. 16, 1980, Ser. No. 159,497
Claims priority, application Japan, Jun. 22, 1979, 54-79311; Jul. 16, 1979, 54-90778; Aug. 6, 1979, 54-100550
Int. Cl.[3] C07C *45/45*
U.S. Cl. 568—347 21 Claims

1. A process for producing cyclopentenolone of the formula (I),



(I)

which comprises ring-closure reaction of γ- diketone of the formula (V),



(V)

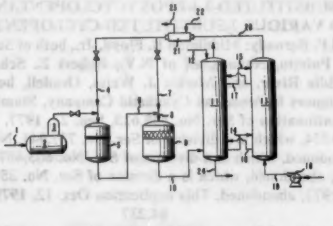
under alkaline conditions, at a temperature of −30° C. to room temperature.

4,343,954

FORMALDEHYDE PROCESS

David J. Hoene, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 28, 1981, Ser. No. 258,382
Int. Cl.[3] C07C *47/052*
U.S. Cl. 568—473 4 Claims



1. A process comprising feeding the effluent from a primary reactor for converting methanol to formaldehyde along with air and recycled methanol, water and formaldehyde to an adiabatic seconary reator utilizing a metal oxide catalyst comprising an oxide or oxides of vanadium, iron, molybdenum, magnesium or manganese, maintaining said secondary reactor at from 300° to 400° C., to provide an overall conversion of 94 to 98%, feeding the effluent from said secondary reactor to an absorber, feeding water to said absorber to absorb formaldehyde, feeding air to a stripper, recycling formaldehyde solution from the bottom section of said absorber to the bottom section of said stripper, recycling formaldehyde solution from the top section of said absorber to the top section of said stripper, recycling air saturated with water, methanol and formaldehyde from said stripper to said secondary reactor, and removing product formaldehyde and water solution from said absorber.

4,343,955

METHOD FOR THE PREPARATION OF CIS-ALKYLCYCLOHEXANOLS

Mituyoshi Oshima, Joetsu, and Jun Yoshimoto, Odawara, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd. and Sankio Chemical Co., Ltd., both of Tokyo, Japan

Filed Mar. 6, 1979, Ser. No. 17,892
Claims priority, application Japan, Mar. 13, 1978, 53-28524
Int. Cl.³ C07C *35/08*
U.S. Cl. 568—834 7 Claims

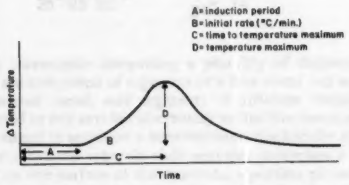
1. A method for preparing cis-4-tert-butylcyclohexanol which comprises hydrogenating 4-tert-butylphenol with hydrogen in the presence of a catalyst containing ruthenium supported on an alumina carrier under a superatmospheric pressure of hydrogen and at an elevated temperature.

4,343,956

STABILIZATION DIBROMOSTYRENE

Philip F. Jackisch, Royal Oak, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 130,118, Mar. 13, 1980, abandoned.
This application Jun. 18, 1981, Ser. No. 274,829
Int. Cl.³ C07C *17/42*
U.S. Cl. 570—105 4 Claims



Representative Differential Thermal Analysis Curve of Polymerization

1. Dibromostyrene stabilized with a polymerization inhibiting quantity of a lower alkyl ester of gallic acid and a synergistic quantity of N,N,N′,N′-tetramethyl-p-phenylenediamine.

4,343,957

PROCESS FOR THE PRODUCTION OF CUMENE

Emanuele Sartorio, Messina; Benedetto Calcagno; Fulvio Trombetti, both of Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

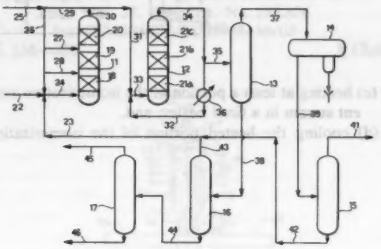
Filed Dec. 19, 1980, Ser. No. 218,333
Claims priority, application Italy, Dec. 19, 1979, 28219 A/79
Int. Cl.³ C07C *2/68*
U.S. Cl. 585—449 12 Claims

1. A continuous process for the production of cumene by alkylation of benzene with propylene on a solid phosphoric acid catalyst, comprising the steps of:

providing a two reaction step series wherein a first step is comprised of a plurality of catalyst beds in fluid connection in series and a second step in fluid connection with said first step comprised of a catalyst bed having a volume substantially equal to the overall volume of the catalyst beds of the first step;

providing an amount of liquid benzene and liquid propylene to the two reaction step series wherein the benzene/propylene molar ratio is at least 5:1;

operating the two reaction step series in the liquid phase, at a temperature of from 170° C. to 270° C., at a pressure of



30 to 50 Kg/sq. cm. wherein the whole of the benzene in liquid form is continuously delivered to a first catalyst bed of the first step, and a series of streams of the liquid propylene at a temperature of 15°–50° C. are continuously delivered respectively to the first catalyst bed of the first step and between each pair of contiguous bed in the first and second steps;

carrying out a partial recycle of reaction products of the second step whereby a cold stream of the reaction product of the second step is cooled to a temperature of 30° to 100° C. and recycled between the first and the second step in an amount such that the benzene/propylene molar ratios at an inlet of the catalyst bed of the second step is higher than about 25:1; and

recovering cumene from reaction products discharged from the second step.

4,343,958

HYDROCARBON ISOMERIZATION PROCESS

Steve A. Gewartowski, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

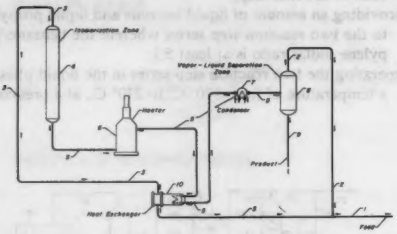
Continuation-in-part of Ser. No. 78,403, Sep. 24, 1979, abandoned, which is a continuation-in-part of Ser. No. 866,663, Jan. 3, 1978, Pat. No. 4,190,520. This application Apr. 28, 1981, Ser. No. 258,334
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.³ C07C *5/22, 5/13*
U.S. Cl. 585—477 7 Claims

1. A hydrocarbon isomerization process which comprises the steps of:

(a) vaporizing the liquid phase portion of a mixed-phase isomerization zone feed stream which comprises a C_5–C_{12} hydrocarbon and also heating the isomerization zone feed stream to an isomerization temperature by indirect heat exchange against a vapor-phase process stream;

(b) passing the isomerization zone feed stream into a hydrocarbon isomerization zone containing an isomerization catalyst and maintained at isomerization conditions and

thereby forming a vapor-phase isomerization zone effluent stream which comprises two different hydrocarbons;



(c) heating at least a portion of the isomerization zone effluent stream in a fired heater; and,

(d) cooling the heated portion of the isomerization zone effluent stream by indirect heat exchange against the feed stream as the vapor-phase process stream of step (a).

4,343,959

PROCESS FOR THE PRODUCTION OF TERTIARY OLEFIN

Kōichi Kida, Toyosaka; Yoshio Kawai, Niigata; Yutaka Tamura, Niigata, and Yoshiharu Suzuki, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed Jul. 2, 1981, Ser. No. 280,071

Claims priority, application Japan, Jul. 25, 1980, 55/102074

Int. Cl.³ C07C *1/20, 11/08*

U.S. Cl. 585—640 **11 Claims**

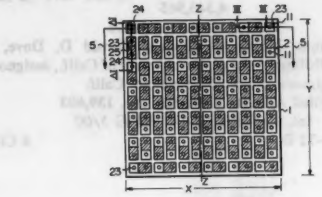
1. In a process to produce a corresponding tertiary olefin from a tertiary ether as the raw material, a process to produce a tertiary olefin which comprises making a gaseous tertiary ether contact a catalyst obtained by calcining a silica-alumina compound at 700°–1100° C. in order to carry out cracking of the tertiary ether.

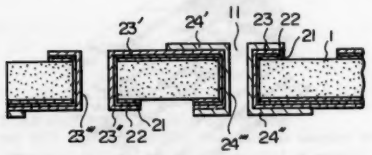
4,343,960

THERMOPILE AND PROCESS FOR MANUFACTURING SAME

Kazuo Eguchi, Ibaraki; Tadashi Kobayashi, Gifu, and Yukiharu Miyake, Tama, all of Japan, assignors to Building Research Institute, Ministry of Construction; Ryoko Electronic Industries Ltd. and Eko Instruments Trading Co., Ltd., all of Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 206,257
Claims priority, application Japan, Nov. 20, 1979, 54-149464
Int. Cl.[3] H01L *35/28*
U.S. Cl. 136—225 6 Claims





1. A thermopile comprising a plurality of thermocouples which are composed of segments of a first metal and segments of a second metal, said segments of different metals being connected to one another alternately so that the thermocouples are arranged in series on a heat-resistant, electrically non-conductive substrate, wherein each segment comprises a portion plated on one surface of the substrate, a portion plated on the other surface of the substrate and a portion plated on the inner wall of through holes formed in the substrate to connect the two portions plated on the two surfaces of the substrate with each other.

4. A process for manufacturing a thermopile comprising a plurality of thermocouples which are composed of segments of a first metal and segments of a second metal, said segments of different metals being connected to one another alternately so that the thermocouples are arranged in series on a heat-resistant, electrically non-conductive substrate, wherein each segment comprises a portion plated on one surface of the substrate, a portion plated on the other surface of the substrate and a portion plated on the inner wall of through holes formed in the substrate to connect the two portions plated on the two surfaces of the substrate with each other, which process comprises the steps of:

(a) forming a plurality of through holes in the heat-resistant, electrically non-conductive substrate at predetermined positions;

(b) subjecting the inner walls of said through holes and both the surfaces of the substrate to electroless plating;

(c) plating the entire surface of said electroless plating layer with the first metal;

(d) forming on the plating layer of the first metal a plating resist covering the plating layer of the first metal except regions corresponding to the portions of the segments of the second metal to be formed thereon and to the openings of the plated through holes opening in said portions;

(e) plating the resist-formed substrate with the second metal by using the plating resist as a mask;

(f) removing the plating resist;

(g) forming on the composite plating layer of the two metals an etching resist covering only regions corresponding to the portions of the segments of the two metals to be formed on the surfaces of the substrate and to the openings of the plated through holes opening in said portions;

(h) performing etching by using the etching resist as a mask; and,

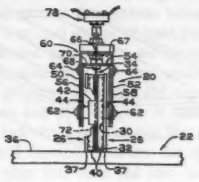
(i) removing the etching resist.

4,343,961

TEMPERATURE SENSING DEVICE HAVING A ROTATING REFERENCE MEMBER

W. Jack Norton, Kittanning, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 31, 1980, Ser. No. 135,836
Int. Cl.[3] G01K *7/08*; H01L *35/02*
U.S. Cl. 136—230 8 Claims



1. A device for sensing temperature of a moving substrate, comprising:

an axle;

at least one wheel having a rim portion mounted on said axle for free rotation to circumscribe a circular path defining a spatial area;

a thermocouple having a temperature sensing junction;

means for mounting said thermocouple to said axle with said temperature sensing junction relative to said rim portion of said at least one wheel in a substantially fixed relationship to a point along the circular path and within the spatial area circumscribed by said at least one wheel;

means mounting said axle for positioning said at least one wheel in a relationship to the substrate to be measured; and

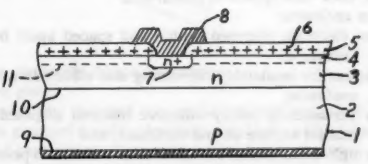
means mounting said axle and said positioning means for preventing relative motion therebetween.

4,343,962

OXIDE CHARGE INDUCED HIGH LOW JUNCTION EMITTER SOLAR CELL

Arnost Neugroschel; Shing-Chong Pao; Fred A. Lindholm; Jerry G. Fossum, all of Dept. of Electrical Engineering, U. of F., Gainesville, Fla. 32611, and Chin-Tang Sah, 403 Pon Ridge La., Urbana, Ill. 61801

Continuation of Ser. No. 57,648, Jul. 16, 1979, abandoned. This application Feb. 2, 1981, Ser. No. 230,682
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—255 1 Claim



1. An accumulation high-low emitter n^+-n-p solar cell comprising an n-p silicon wafer having a thin oxide surface layer of the n-type emitter layer for suppression of the dark emitter recombination current, a positive charge in said oxide layer, a high-low-junction induced in said emitter layer by said charge,

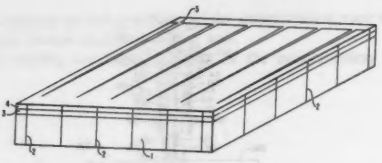
a metal conductor extending through an opening in said oxide layer, and an n^+contact diffusion formed in said emitter layer and in contact with said conductor, said n^+contact diffusion forming with said emitter layer an n^{30}-n high low junction beneath said conductor for suppression of the hole recombination current thereat.

4,343,963

SUBSTRATE FOR SILICON SOLAR CELLS

Donald E. Thomas, Mt. Lebanon, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 2, 1979, Ser. No. 16,766
Int. Cl.[3] H01C *31/06*
U.S. Cl. 136—258 7 Claims



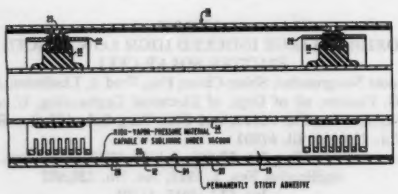
1. An article comprising:
(a) a sheet of large-grained silicon steel;
(b) a layer of epitaxial tungsten deposited on said substrate; and
(c) a layer of epitaxial doped silicon on said layer of tungsten.

4,343,964

ADHESIVE COATED ELECTRICAL APPARATUS HAVING SUBLIMABLE PROTECTIVE COVERING AND AN ASSEMBLY METHOD

Roy E. Wootton, Murrysville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 19, 1981, Ser. No. 226,330
Int. Cl.[3] H01B *9/06, 9/04;* H02G *1/00, 5/06*
U.S. Cl. 174—10 13 Claims



3. Electrical apparatus comprising:
an enclosure;
an electrode disposed within and spaced apart from said enclosure;
means for insulatably supporting said electrode within said enclosure;
a permanently sticky adhesive material disposed on the interior surface of said enclosure; and
a high-vapor-pressure material disposed on said permanently sticky adhesive material, said high-vapor-pressure material capable of subliming away under vacuum.

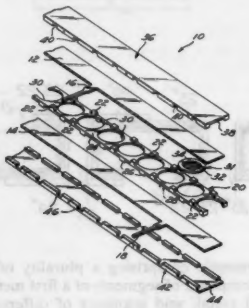
10. A method for assembling electrical apparatus of the type including an enclosure and an electrode insulatably supported within said enclosure comprising:
depositing a permanently sticky adhesive material on the interior surface of an enclosure;
depositing a high-vapor-pressure, sublimable cover material on said permanently sticky adhesive material;
placing an electrode within said enclosure in insulated relationship with respect thereto;
creating a vacuum in said enclosure which vacuum sublimes away said cover material; and
inserting an insulating gas in said enclosure.

4,343,965

BUS BAR ASSEMBLY

Paul M. Deters, Manhattan Beach; Harold D. Dove, and Mickey E. Billings, both of Anaheim, all of Calif., assignors to Bussco Engineering, Inc., El Segundo, Calif.

Filed Apr. 14, 1980, Ser. No. 139,653
Int. Cl.[3] H01B *5/00;* H02G *5/00*
U.S. Cl. 174—72 B 6 Claims

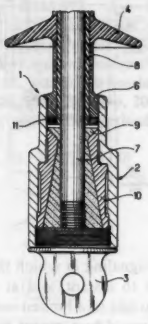


1. A bus bar assembly comprising:
a first elongated electrical conducting member, a second elongated electrical conducting member, both said first and second conducting members being constructed of sheet material, each of said conducting members having electrical connectors adapted to electrically connect with electrical circuitry;
a separation member being located between said first member and said second member, said separation member being non-electrically conductive to electrically insulate said first and second members, an opening assembly formed within said separation member;
a capacitor assembly located within said opening assembly, said capacitor assembly to provide an electrical capacitance between said first and said second members, said capacitor assembly being connected only by direct physical contact with both said elongated electrical conducting members to establish an electrical connection therebetween;
a covering assembly exteriorly encasing said elongated members, said covering assembly electrically insulating said elongated members to the ambient, said covering assembly including a pair of elongated plates, one of said elongated plates to be located directly adjacent the exterior surface of said first elongated electrical conducting member with the other of said elongated plates being located directly adjacent the exterior surface of said second elongated electrical conducting member; and
interlocking means located between each of said elongated plates and said separation member, said interlocking means functioning to lock together said plates and said separation member as well as said first and second elongated members into a single substantially integral unit, said interlocking means comprising a mating protuberance and groove assembly.

4,343,966
ELECTRIC LINE INSULATOR MADE OF ORGANIC MATERIAL AND HAVING AN INNER SEMI-CONDUCTIVE PART EXTENDING BETWEEN END ANCHOR FITTINGS

Laurent Pargamin, Vichy, France, assignor to Ceraver, Paris, France

Division of Ser. No. 961,163, Nov. 16, 1978, Pat. No. 4,267,403. This application Oct. 3, 1980, Ser. No. 193,690
Claims priority, application France, Dec. 14, 1977, 77 37652
Int. Cl.³ H01B *17/02, 17/42*
U.S. Cl. 174—140 S 5 Claims



1. An electric line insulator comprising:

a bar with high mechanical resistance to traction made of a composite material comprising mineral or organic fibers or threads bonded by a hardenable synthetic resin;

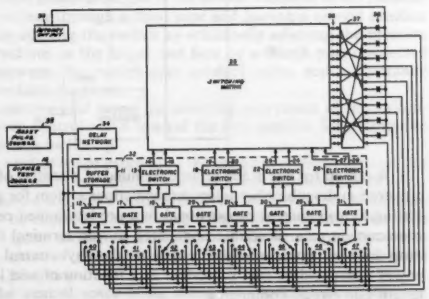
a protective sheath fixed over the entire surface of the bar with the exception of the ends of the bar, said ends being embedded in anchoring fittings by means of a sealant material which directly surrounds the ends of said bar, said sheath being composed of a semi-conductive elastomer and being in electrical contact at each of its ends with said anchoring fittings; and

fins of an insulating elastomer fixed onto said sheath with no surface of the sheath directly exposed to the outside; thus, the sheath remains completely protected from contact with electrolytes and obviates the disadvantages due to electrochemical corrosion, while providing suitable distribution of the electric field.

4,343,967
AUTOKEY CODE GENERATOR

Beryl L. McArdle, Rochester, N.Y., assignor to General Dynamics Corporation Electronics Division, San Diego, Calif.

Filed Feb. 28, 1950, Ser. No. 146,871
Int. Cl.³ H04L *9/04*
U.S. Cl. 178—22.19 5 Claims

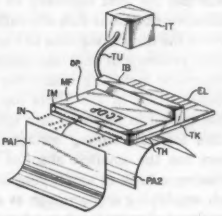


1. In an autokey code generator for use in secret communication systems, the combination of a source of cipher text code in pulse form; a source of reset pulses having a repetition period equal to the cipher text code interval; a dynamic pulse storage network including an input connected to said source of cipher text code, a plurality of stages connectable in sequence to step the pulses of said cipher text code along said sequence under control of said reset pulses; each said stage except the first having at least one output, matrix means having a plurality of inputs and a plurality of outputs for obtaining at any given instant a signal at one of said outputs, the particular one of said outputs at which said signal is present being dependent on the combination of voltage applied to said inputs, said inputs of said matrix means being respectively connected to said outputs of said stages; each said stage except the first having first and second gate means, said first gate means being connected to transfer the output of the preceding stage to the stage connected thereto, said second gate means being connected to supply reset pulses from said source of reset pulses to the stage individual to said second gate means; said outputs of said matrix means being divided into first and second groups; said outputs in said first group being connected together to form an autokey code output and said outputs in said second group being connected to individual ones of said first and second gate means for the control thereof, whereby the operation of said stages from said cipher text code fed into said input of said network is modified as determined by the signal configuration present at said outputs of said matrix means.

4,343,968
ELECTRONIC DEVICE HAVING UNITARY DISPLAY AND PRINTING SECTIONS

Shigeru Toyomura, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1980, Ser. No. 131,489
Claims priority, application Japan, Mar. 27, 1979, 54-36039
Int. Cl.³ H05B *1/00*; G06F *3/12*
U.S. Cl. 178—23 R 4 Claims



1. An electronic device comprising:

a base plate;

a display part disposed on a surface of said base plate;

a first group of signal lead wirings provided on the surface of said base plate and connected to said display part;

a row of a group of dot shape thermal elements provided on an opposite surface of said base plate;

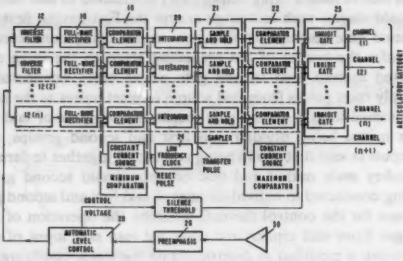
a second group of signal lead wirings provided on the opposite surface of said base plate and connected to said thermal elements; and

flexible wiring boards connected to each of said first and second groups of lead wirings.

4,343,969
APPARATUS AND METHOD FOR ARTICULATORY SPEECH RECOGNITION

Henry G. Kellett, Atkinson, N.H., assignor to Trans-Data Associates, Fallington, Pa.

Continuation-in-part of Ser. No. 947,944, Oct. 2, 1978, abandoned, which is a continuation-in-part of Ser. No. 781,715, Mar. 28, 1977, abandoned. This application Aug. 1, 1980, Ser. No. 174,662
Int. Cl.³ G10L *1/00*
U.S. Cl. 179—1 SD 20 Claims



1. An apparatus, for the classification of speech according to successive articulatory conditions thereof and substantially independent of the pitch thereof, comprising:

a bank of electronic filters, in which:

the input of each filter is connected to a common input for connection to an electrical signal representing the speech to be classified;

each electronic filter is designed to have a transfer function that approximates the inverse of the complex transfer function of one articulatory condition of a vocal tract, whereby input into such filter of a non-zero signal representing the specified articulatory condition produces an output from such filter approximating a series of one or more source impulses and approximating zero output between such impulses;

a comparator for determining repeatedly which of the filters has the best recovery of source impulses over successive durations that are sufficiently short so as to involve the filter's response to a speech signal representing the presence of only one articulatory condition, said comparator including means for determining instantaneously which of the filters has the smallest absolute value output in response to a speech signal input, said means for determining instantaneously which of the filters has the smallest absolute value output in turn including a bank of amplifying devices wherein:

each amplifying device (such as a transistor) comprises an input element (such as a base), an element common to the input and the output (such as an emitter), and and output element (such as a collector), the current through the output element is a function of the voltage on the input element with respect to the common element;

all common elements of the amplifying devices in the bank are connected to a constant current source;

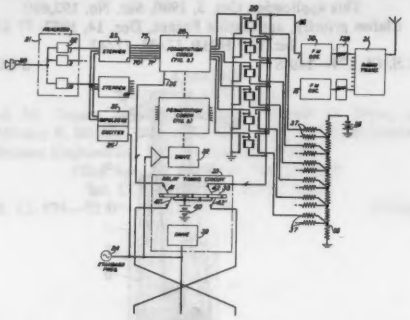
each input element is connected to a filter channel output signal to be compared;

so that the output element contains a signal indicative of whether a given amplifying device is conducting and therefore receiving on its input element the minimum of the signals being compared.

4,343,970
SIGNALING SYSTEM

Walter Koenig, Jr., Clifton, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 19, 1953, Ser. No. 337,749
Int. Cl.³ H04K *1/06*
U.S. Cl. 179—1.5 R 5 Claims

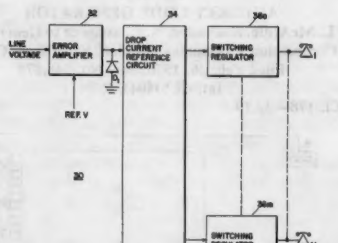


1. In electrical signaling in which the signal varies in amplitude from instant to instant, and at any one instant has an amplitude equal to one of a limited number of values having a total range in excess of two, means to disguise the signal preparatory to transmission comprising means in each instant to establish for transmission under control of said signal a voltage having with substantially equal probability any one of a like limited number of amplitude values having a total range in excess of two, means to transmit said established voltages, and means at a receiving point to retranslate the transmitted voltages into the clear signal.

4,343,971
SUBSCRIBER DROP CIRCUIT FOR CONTROLLING DROP CURRENT WITH LOAD AND MAXIMIZING POWER USAGE

Gerald W. Beene, Arlington, Tex., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Feb. 17, 1981, Ser. No. 234,711
Int. Cl.³ H04M *19/00*
U.S. Cl. 179—70 20 Claims



1. A circuit for use in the remote terminal of a central office powered multi-subscriber telecommunications system for generating a drop current proportional to a predetermined reference current to a subscriber connected to said terminal by a drop loop of predetermined length to thereby control the power consumed by said subscriber as a function of said loop length said circuit comprising:

(a) switching means having a controllable conduction time for generating said drop current;

(b) means for generating a voltage proportional to said drop current;

(c) means for generating a voltage proportional to said reference current; and

(d) means responsive to said drop current proportional voltage and said reference current proportional voltage for controlling said conduction time of said switching means such that said drop current proportional voltage is made substantially equal to said reference current proportional voltage whereby the power consumed by said subscriber is controlled as a function of said loop length.

4,343,972

HYDRAULIC DRIVE FOR ELECTRICAL SWITCHES

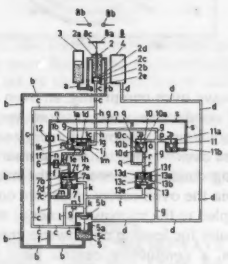
Walter Bischofberger, Niederweningen, and Norbert Zeller, Ennetbaden, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Filed Oct. 28, 1980, Ser. No. 201,523

Claims priority, application Switzerland, Nov. 1, 1979, 9799/79

Int. Cl.³ H01H *35/38*

U.S. Cl. 200—81 R 11 Claims



1. A hydraulic drive for electrical switches comprising:

a drive cylinder;

a drive piston dividing the drive cylinder into first and second chambers and being connected to an electric switch, said drive piston being arranged for reciprocation within the drive cylinder for opening and closing the electric switch and having first and second end faces having different effective areas;

a smaller end face of the piston being arranged in the first chamber and being constantly exposed to a pressure medium pressurized in a hydraulic reservoir and connected to the first chamber of the cylinder by a first pipe;

a switch-over control valve for actuating movement of the drive piston for opening or closing the switch is connected to the first chamber of the drive cylinder by a second pipe, said switch-over control valve having a first position for closing the switch by selectively exposing a larger end face of the piston arranged in the second chamber to the pressure medium through a third pipe and having a second position for opening the switch by selectively relieving the pressure medium on the larger end face by a fourth pipe connected between the switch-over control valve and a hydraulic medium container;

a control signal organ for initiating movement of the switch-over control valve toward the first position for closing the switch including

a central space exposed to the pressure medium through the second pipe, a fifth pipe and a first restrictive orifice,

the central space being selectively connected to the hydraulic medium container to relieve the pressure within the space through a sixth pipe and the fourth pipe by movement of a switchable control signal organ part to open position,

the central space being selectively isolated from the container when said organ part is in a closed position, and

first resetting means for hydraulically resetting the control signal organ part to the closed position, said first resetting means being exposed to pressure medium at approximately the same time as the larger end face of the drive piston is exposed to the pressure medium through the switch-over control valve, the third pipe and a seventh pipe.

4,343,973

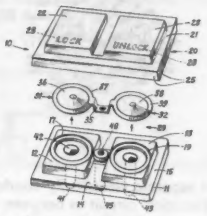
LOW COST ELECTRICAL SWITCH

Robert T. Main, Arlington Heights, Ill., assignor to Cherry Electrical Products Corp., Waukegan, Ill.

Filed Aug. 13, 1980, Ser. No. 177,786

Int. Cl.³ H01H *13/70*

U.S. Cl. 200—159 B 10 Claims



1. An electrical switch comprising:

at least one electrically conductive contact means having an extending conductive strip with an aperture formed therethrough;

a base having a top surface and a bottom surface;

at least one electrically conductive switching terminal extending through the base and having an electrically conductive head portion exposed on said top surface;

at least one electrically conductive common terminal extending through the base and having an upstanding electrically conductive post extending above a portion of said top surface;

means for supporting a contact portion of said at least one electrically conductive contact means in spaced relation over at least one switching terminal with the upstanding electrically conductive post passing through the aperture of said extending conductive strip and the strip contacting the head of the common terminal; and

an insulative cover extending over the top surface of the base, the cover including at least one flexible, resilient face plate portion for flexing downwardly relative to the base in response to applied pressure and pressing the contact portion of said at least one electrically conductive contact means against at least one underlying switching terminal, the face plate and the contact portion of the conductive contact means returning to respective unflexed positions when the pressure is removed.

4,343,974

MULTI-CIRCUIT ELECTRICAL SWITCH

Charles J. Hire, and Gary L. Deppe, both of Mansfield, Ohio, assignors to Hi-Stat Manufacturing Company, Inc., Lexington, Ohio

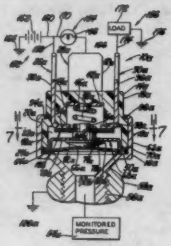
Division of Ser. No. 42,771, May 29, 1979, Pat. No. 4,255,630. This application Sep. 2, 1980, Ser. No. 183,248

Int. Cl.³ H01H *1/20, 35/34*

U.S. Cl. 200—243 14 Claims

1. An electrical switching arrangement, comprising first and second electrical contact means spaced from each other, third electrical contact means spaced from both of said first and second electrical contact means, and fourth electrical contact means movable to and from at least two operating positions, said fourth electrical contact means when in one of said two

operating positions being electrically operatively engaged with said first and second electrical contact means, said fourth electrical contact means when in the other of said two operating positions being electrically operatively engaged with said third electrical contact means, said fourth electrical contact means comprising at least first, and second separate electrically conductive path means, said first and second electrically conductive path means being fixed with respect to each other as to thereby prevent movement of said path means relative to each other during all conditions of operation, said fourth electrical contact means when in said one of said operating positions



causing said first separate electrically conductive path means to complete an electrical circuit as between said first and second contact means, said fourth electrical contact means when in said other of said operating positions causing said second separate electrically conductive path means to complete an electrical circuit with said third electrical contact means, wherein whenever said fourth contact means is in said one of said operating positions the said electrical circuit with said third electrical contact means is open, and wherein whenever said fourth contact means is in said other of said operating positions the said electrical circuit with said first and second contact means is open.

4,343,975

KEY BOARD SWITCH UNIT WITH ILLUMINATION

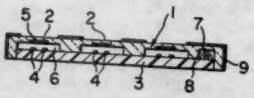
Ryoichi Sado, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1980, Ser. No. 211,781

Claims priority, application Japan, Dec. 7, 1979, 54-170217[U]

Int. Cl.³ H01H *9/18*

U.S. Cl. 200—314 **6 Claims**



1. A key board switch unit with illumination which comprises:

(a) a base plate,

(b) at least one fixed contact provided on the surface of the base plate,

(c) a switch panel member mounted on the base plate and having at least one pushing area carrying at least one moveable contact positioned above the fixed contact point on the base plate for engagement with said fixed contact, at least a portion of the pushing area thereof being made of a transparent or translucent material,

(d) at least one light source installed in a lamphouse between the base plate and the switch panel member at such a position that the light emitted therefrom is not directly visible from above through the transparent or translucent portion of the pushing area of the switch panel member, and

(e) wherein said switch panel is an optical conductor constructed of a transparent or translucent material to conduct the light emitted from the light source to the pushing area.

4,343,976

ENERGY FEED SYSTEM FOR A MICROWAVE OVEN

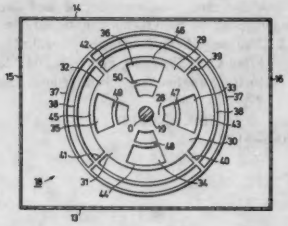
Mansur A. Nasretdin, and Sten A. E. Ohlander, both of Norrköping, Sweden, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 19, 1980, Ser. No. 132,469

Claims priority, application Sweden, Mar. 19, 1979, 7902407

Int. Cl.³ H05B *6/72*

U.S. Cl. 219—10.55 F **18 Claims**



1. A microwave oven comprising, an oven cavity limited by a plurality of conductive walls, and an energy feed system coupling energy from a microwave energy source to the interior of the oven cavity comprising, a substantially symmetrical planar radiating conductor system of the microstrip-line type arranged within the oven cavity close to a conductive ground plane and coupled to the microwave energy source at a central energy feed point for feeding microwave energy into the conductor system, a conductive central plate surrounding the central feed point on all sides and arranged in the plane of the conductor system and having a plurality of radially extending conductive plates at its circumference, openings which widen outwardly being formed between said conductive plates, and at least one annular closed conductor enclosing the radial conductive plates so as to receive energy from said radial plates.

4,343,977

ELECTRONIC CONTROLLED HEAT COOKING APPARATUS

Hideaki Koyama, Otsu, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Sep. 23, 1980, Ser. No. 189,587

Claims priority, application Japan, Sep. 26, 1979, 54-124309; Sep. 28, 1979, 54-126063

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—10.55 B **11 Claims**

1. An electronic controlled cooking apparatus, comprising:

heating energy generating means for providing heating energy to a material being cooked,

timer means for defining a cooking time period of a cooking operation by said heating energy generating means,

said timer means comprising

a displacement member provided to be displaceable over any section of a predetermined range from an origin point for setting an initial timer time period, said predetermined range being divided into a plurality of sections each of which corresponds to a different timer time period,

means responsive to displacement of said displacement member for generating a unique code signal for each said section associated with the displacement amount of said displacement member from said origin point,

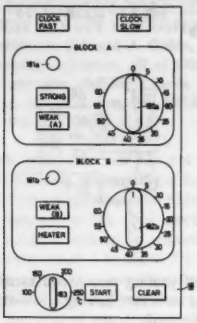
timer time period information storing means for storing the

code signals generated by said code signal generating means,

control means responsive to said timer time period information stored in said timer time period information storing means for controlling said heating energy generating means,

first displacement detecting means for providing a first output only upon said displacement member having been first displaced by more than a first predetermined amount from the point as set by the initial setting of said displacement member,

said timer time period information storing means responsive to said first output for storing new timer time period information determined by said unique code signal obtained from said code signal generating means.



4,343,978

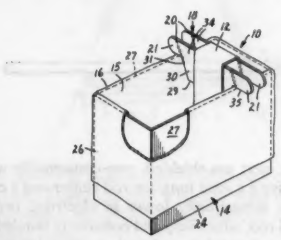
STRUCTURE FOR USE IN MICROWAVE COOKING

James F. Kubiatowicz, 1630 Rice Creek Rd., Minneapolis, Minn. 55432

Continuation of Ser. No. 14,304, Feb. 21, 1979, abandoned. This application Nov. 18, 1980, Ser. No. 208,050

Int. Cl.³ H05B *6/80*

U.S. Cl. 219—10.55 E **8 Claims**



1. A disposable structure adapted for cooking strips of food of a predetermined length such as bacon that give off liquids in the cooking process in a microwave oven, said structure comprising:

a nonmetallic base portion having a top surface and a cavity recessed from said top surface of a size adapted to at least contain liquid released from the strips; said base portion comprising a stiff paper support structure having side walls defining the shape of said cavity, and a flexible bag adapted to contain high temperature liquids removably lining the support structure to define the inside surface of said cavity; and

a stiff paper support portion separable from said base portion, having a narrow support surface, and having parts adapted to engage and be supported on said base portion with said narrow support surface generally horizontal and positioned over and spaced from the bottom of the cavity at a distance of at least about one half said predetermined length so that a strip of food may be hung over said support surface with its end portions extending into said cavity to cause liquid released in the cooking process to be directed into and contained in said cavity.

4,343,979

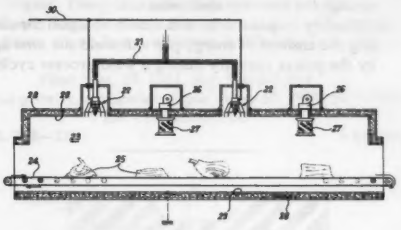
DEVICE FOR RAPID DEFREEZING OF FROZEN OR DEEP-FROZEN PRODUCTS

Spartacus Barbini, Chaville, and Michel Jolion, Avon, both of France, assignors to Electricite de France (Service National), Paris, France

Continuation-in-part of Ser. No. 821,922, Aug. 4, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,206

Int. Cl.³ H05B *6/78;* **A23L** *3/36*

U.S. Cl. 219—10.55 A **3 Claims**



1. A device for defreezing frozen or deep-frozen products comprising:

a furnace;

a conveyor system comprising a grounded metal support on which the products to be defrozen are mounted and on which said products are passed through said furnace by means of said conveyor system;

a generator for producing high-frequency radiation and radiating elements connected to said generator, said radiating elements being distributed in said furnace around the conveyor;

means for electrostatic spraying of said products with a cryogenic liquid, said means comprising a cryogenic liquid supply, a sprayer including a cryogenic liquid duct connected to said supply, the distal portion of said duct constituting a bent metallic rod with an opening provided with a spraying cone, a metallic disc being mounted in front of said cone on the downstream side, said rod, said cone, and said disc being connected to a high electrostatic voltage source, said opening being adapted to receive a substantially liquid flow of the cryogenic liquid, said disc cooperating with said cone to disperse the cryogenic liquid into a substantially uniform jet of droplets, said sprayer being mounted at the entrance of said furnace.

4,343,980

CONTROL OF WELDING ENERGY FLUX DENSITY

Andrew Stanya, North Royalton; Joseph E. Franklin, Medina, and David W. Dickinson, Hinckley, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Apr. 2, 1980, Ser. No. 136,518

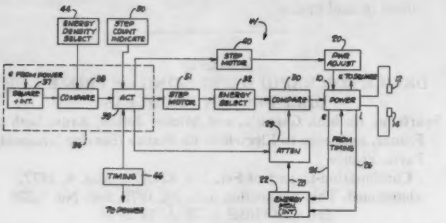
Int. Cl.³ B23K *11/24*

U.S. Cl. 219—110 **13 Claims**

1. A welding system comprising:

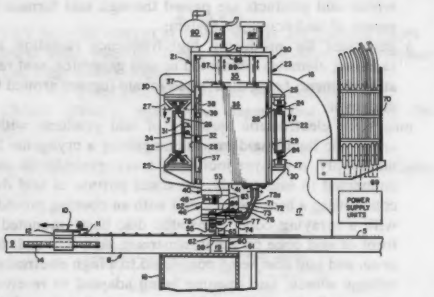
(a) apparatus including electrodes and power circuitry for applying heating energy to a welding site to effect a weld between two workpieces in accordance with a cyclically repeatable welding process;

(b) means for monitoring the amount of heating energy applied in the welding process;
(c) circuitry for producing an electrical signal which is a function of the energy density applied per unit weld site



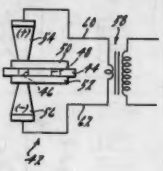
area, said signal being a function of substantially only the voltage between the electrodes and
(d) circuitry responsive to said electrical signal for controlling the amount of energy per unit weld site area applied by the power circuitry during a weld process cycle.

4,343,981
RESISTANCE WELDING MACHINE
James D. Connolly, P.O. Box 1238, Princeton, W. Va. 24740
Filed Sep. 8, 1980, Ser. No. 184,982
Int. Cl.³ B23K *11/32, 37/04;* B21F *15/08, 27/10*
U.S. Cl. 219—56 **17 Claims**



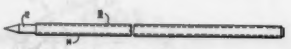
1. A resistance welding machine for welding one set of members in succession and spaced relation to another member at a welding station extending transversely of the other member, comprising welding means including a welding unit having a carriage intermittently and incrementally drivable above and along the welding station, a transformer mounted for relative reciprocal vertical movement in said carriage, ram means suspended from said transformer for movement in unison therewith, welding electrode meand depending from said ram means and normally spaced above a member of the one set in the welding station and engageable therewith in an advance stroke of said ram means for applying welding pressure during welding of said member of the one set to the other member, and power means mounted on said carriage and acting through said transformer for powering advance and retract strokes of said ram.

4,343,982
METHOD OF JOINING METAL TO GRAPHITE BY SPOT WELDING
Stephan Schwartz, Vaxholm; Roland Söderström, Akersberga, and Ake Bjareklint, Vallentuna, all of Sweden, assignors to Energy Development Associates, Inc., Madison Heights, Mich.
Filed Mar. 23, 1981, Ser. No. 246,841
Int. Cl.³ B23K *11/16*
U.S. Cl. 219—118 **23 Claims**



1. A method of joining two metal members to a graphite member to form a structure having a low-transition resistance, comprising the steps of:
(a) providing a plurality of openings in said graphite member;
(b) interposing said graphite member between said metal members and positioning said metal members to cover said openings in said graphite member; and
(c) resistance spot welding said metal members to said graphite member at said openings in said graphite member.

4,343,983
NON-CONSUMABLE COMPOSITE WELDING ELECTRODE
Urban A. Schneider, St. Petersburg, and Robert L. Nelson, Tampa, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Sep. 20, 1979, Ser. No. 77,209
Int. Cl.³ B23K *35/04, 35/32*
U.S. Cl. 219—145.21 **5 Claims**



1. A tungsten inert gas-shielded, non-consumable welding electrode comprising a solid tungsten rod center and a concentric outer sleeve substantially lower in electrical resistivity than the tungsten rod, adhesively and cohesively bonded to the tungsten by thermal spraying so that the surface irregularities of the mating surface areas of the tungsten and outer sleeve mechanically interlock with some oxide-to-oxide bonding without alloying of the tungsten rod center and sleeve material.

5. A tungsten inert gas-shielded welding torch comprising:
a gas nozzle;
an electrical contactor for transferring welding current affixed at one end of the nozzle; and
an elongated non-consumable welding electrode, over three inches in length, in electrical contact with and extending from the electrical contactor through and beyond the opposite end of the nozzle, wherein the electrode comprises a solid tungsten rod center and a concentric outer sleeve substantially lower in electrical resistivity than the tungsten rod, adhesively and cohesively bonded to the tungsten by thermal spraying so that the surface irregular-

ities of the mating surface areas of the tungsten and outer sleeve mechanically interlock with some oxide-to-oxide bonding without alloying of the tungsten rod center and sleeve material.

4,343,984

GAS-SHIELDED FLUX-CORED WIRE ELECTRODES FOR HIGH IMPACT WELDMENTS

Ronald B. Smith, Jefferson; Edward J. Galda, Ashtabula, and Masahiro Nakabayashi, Jefferson, all of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 19, 1978, Ser. No. 897,825
Int. Cl.³ B23K *35/30*
U.S. Cl. 219—146.3 **4 Claims**

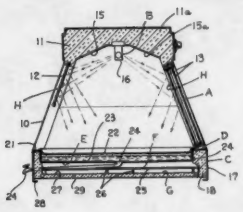
1. In a consumable wire electrode for out of position gas shielded electric arc welding comprising a hollow sheath of mild steel and a flux core comprising essentially from about 10 to about 20 weight percent of the total electrode, said core material containing rutile, a sodium or potassium bearing arc stabilizer; a metal of from about 1 to about 7 weight percent of said core material taken from the class consisting of magnesium and magnesium-aluminum alloys, from about 3 to 10 weight percent of said core material of manganese oxide, wherein the improvement comprises said core material containing from 5 to about 20 weight percent nickel and from about 5 to 15% by weight ferromanganese-silicon.

4,343,985

COUNTER TOP FOOD WARMER AND DISPLAY CASE

Robert G. Wilson, 10 Chisolm Trail, Greenville, S.C. 29607, and Raymond W. Rogers, Greenville, S.C., assignors to Robert G. Wilson, Mauldin, S.C.

Continuation of Ser. No. 849,432, Nov. 7, 1977. This application Jan. 29, 1980, Ser. No. 116,819
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—214 **3 Claims**



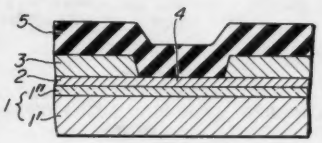
1. A counter top food warmer and display case comprising:
a glass enclosure including a display window;
heating means carried within an insulated upper portion of said enclosure;
a compact lower housing carrying said glass enclosure thereon;
said lower housing including spaced end walls, front and back side walls, and a bottom wall defining a housing structure having an open interior;
opposing ledge means integral with said side walls of said lower housing defining an upper portion of said lower housing;
a water carrying receptacle contiguous with said opposing ledge means of said housing coextending generally across said open interior for humidifying said enclosure;
a food carrying tray means extending between and carried by said opposing ledge means above said water carrying receptacle;
said tray means forming a bottom of said glass enclosure adjacent an upper portion of said housing;
a heating element disposed in said housing below said water carrying receptacle and closely adjacent thereto for heating water carried therein;
an insulated base carried on the bottom wall of said housing, said heating element being carried on said insulated base affording protective placement of said food warmer on the surface of an associated counter top;
said lower housing providing a compact low profile structure for housing said food tray means, water receptacle means, heating element, and insulated base in a closely stacked configuration; and
said glass enclosure having a height at least twice that of said compact lower housing;
whereby said food warmer can be placed on a counter top utilizing a minimum amount of space while affording a maximum exposure of the interior of said food warmer.

4,343,986

THERMAL PRINTHEAD

Masao Mitani; Toyoji Tsunoda; Tsuneyoshi Kawahito, all of Yokahoma; Tsuneaki Kamei, Kanagawa, and Akira Yabushita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 19, 1981, Ser. No. 245,511
Claims priority, application Japan, Mar. 19, 1980, 55/33890
Int. Cl.³ H05B *1/00*
U.S. Cl. 219—216 **5 Claims**



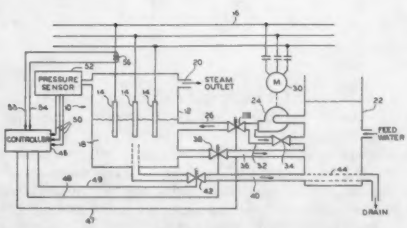
1. A thermal printhead comprising a substrate, heat generating thin film resistor bodies formed on said substrate and electric conductors for supplying said heat generating thin film resistor bodies with electric power, characterized in that said heat generating thin film resistor bodies are made of a Cr-Si alloy subjected to a stabilization aging heat treatment.

4,343,987

ELECTRIC BOILER

Paul A. Schimbke, Milwaukee, Wis., and Stanley A. Williams, Poole, England, assignors to Aqua-Chem, Inc., Milwaukee, Wis.

Filed May 14, 1979, Ser. No. 38,891
Int. Cl.³ H05B *1/02*
U.S. Cl. 219—287 **11 Claims**



1. An electric boiler having a first vessel adapted to contain a quantity of water and electrodes disposed within said first vessel for heating said water to generate steam,
pressure sensing and control means coupled to said first vessel for sensing the pressure therein for producing a first signal when said pressure falls below a first predetermined value, a

second signal when said pressure rises above a second predetermined value after the occurrance of said first signal, a third signal when said pressure rises above a third value above said first and second values and a fourth signal when said pressure thereafter falls to a fourth value between said second and third values,

said boiler also including a second vessel for containing a quantity of water,

discharge means coupled to said first vessel and having a discharge mode for discharging water therefrom,

timing means coupled to said discharge means and to said pressure sensing and control means and operative upon the receipt of said first signal to place the discharge means in its discharge mode and for maintaining the same in said mode for a predetermined time interval,

transfer means interconnecting said first and second vessels and being operative to transfer water therebetween, said timing means being coupled to said transfer means and being operative to actuate said transfer means for the transfer of a second quantity of water from said second vessel to said first vessel after said predetermined time interval,

said transfer means also being coupled to said pressure sensing and control means and being responsive to said second signal for terminating the transfer of water from said second vessel to said first vessel, said transfer means being responsive to said third signal for transferring water from said first vessel to said second vessel when the pressure in said first vessel exceeds said third predetermined value, said transfer means being operative to terminate the transfer of water from said first vessel upon the occurrence of said fourth signal.

4,343,988

ELECTRICAL RESISTANCE WATER HEATING DEVICE, PARTICULARLY FOR BEVERAGE PREPARATION MACHINES

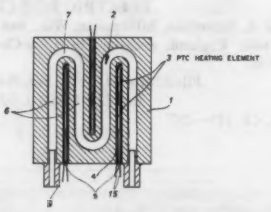
Hanno Roller; Helmut Ohnmacht, both of Kandel; Ludwig Lieber, Steinweiler, and Karl-Heinz Nauerth, Erlenbach, all of Fed. Rep. of Germany, assignors to Firma Fritz Eichenauer, Kandel, Fed. Rep. of Germany

Filed Jan. 16, 1979, Ser. No. 3,917

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1978, 2804784

Int. Cl.³ H05B *3/02*; F24H *1/12*; A47J *31/44*

U.S. Cl. 219—302 **11 Claims**



1. An electrical resistance heating device suitable for use in a hot-plate or the like comprising a solid metal heating plate having a plate-shaped body and planar upper and lower surfaces, and a fluid throughflow duct formed therein between said upper and lower surfaces, said duct including at least two elongated, spaced side-by-side branches having corresponding ends interconnected by a connecting conduit to form a continuous fluid flow path in a single plane from a fluid inlet to a fluid outlet of said body, an elongated slot being formed in said plate between each pair of side-by-side branches, and at least one plate-shaped planar heating element being accommodated within each respective elongated slot with each of the opposing major surfaces thereof directed toward a respective one of the pair of side-by-side branches of said duct between which the slot is formed.

4,343,989

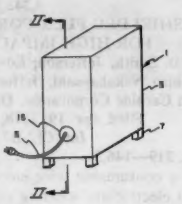
MAGNESIUM OXIDE BASED HEAT STORAGE DEVICE

Denis A. Brosnan, 217 Avondale Dr., Tullahoma, Tenn. 37388

Filed Nov. 24, 1980, Ser. No. 209,692

Int. Cl.³ C04B *35/04*; F24H *7/00*; H05B *3/02*

U.S. Cl. 219—378 **12 Claims**



1. A magnesium oxide based heat storage device, comprising:

a heat source; and a

cast magnesium oxide based heat storage material surrounding said heat source, said cast magnesium oxide based heat storage material comprising magnesium oxide in an amount greater than 35 percent by weight bonded with from 5 to 40 percent by weight of calcium aluminate cement.

4,343,990

HEATING APPARATUS SAFETY DEVICE USING VOICE SYNTHESIZER

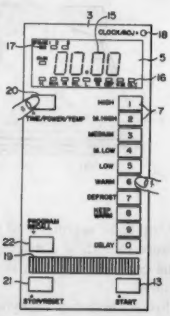
Shigeki Ueda, Nara, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Oct. 15, 1980, Ser. No. 197,204

Claims priority, application Japan, Oct. 18, 1979, 54-134943; Oct. 18, 1979, 54-134944; Oct. 18, 1979, 54-134945; Oct. 18, 1979, 54-134946

Int. Cl.³ H05B *9/06*

U.S. Cl. 219—492 **5 Claims**



1. A heating apparatus comprising:

a heating chamber for housing an object to be heated;

heating means for supplying heat to said heating chamber;

input means for programming a desired operation, said input means including at least one multi-command key for accomplishing a multiplicity of functions;

a main control section having a random access memory (RAM) for storing a current operating condition, said main control section

selecting a function to be performed among said multiplicity of functions by checking said RAM to determine the current operation condition when said multi-command key is depressed, and

producing a voice select signal corresponding to the selected function;

a time control section controlled by a control signal from said main control section for controlling the supply of power to said heating means;

output switching means for varying the output of said heating means in response to a control signal from said main control section;

a voice memory for storing a plurality of voice data;

a voice synthesizer section for reading out selected voice data from said voice memory and synthesizing said selected voice data into a voice; and

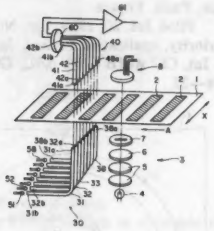
means for producing an address signal for a predetermined voice data in response to the voice select signal from said main control section in order to read out the voice data stored in said voice memory, said voice synthesizer section announcing said selected function to be performed together with a procedure to be operated subsequently.

4,343,991

SAMPLE DETECTOR

Toshihide Fujiwara, Fuchu, and Nobutaka Kaneko, Hachiouji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 21, 1980, Ser. No. 151,888
Claims priority, application Japan, May 25, 1979, 54-64817
Int. Cl.³ G01D *21/04*
U.S. Cl. 250—227 **3 Claims**



1. A sample detector for monitoring a moving carrier, comprising:

a first optical fiber group including a plural number of optical fibers arranged in a direction perpendicular to the moving direction of said carrier and having exit end surfaces adjacent to said carrier,

a second optical fiber group including a plural number of optical fibers having entrance end surfaces arranged opposite to the exit end surfaces of said first optical fiber group and bundled exit end surfaces,

a plural number of light emitting elements arranged in the vicinity of the entrance end surfaces of the individual optical fibers of said first optical fiber group,

a photodetector element arranged in the vicinity of the bundled exit end surfaces of said second optical fiber group,

a preamplifier connected to the output side of said photodetector element,

said sample detector being so adapted as to detect the presence of samples applied onto said carrier based on outputs from said preamplifier, and

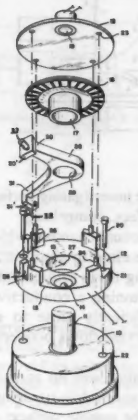
photometric means arranged adjacent to said first and second optical fiber groups and being operative when a time determined by the spacing between said first and second optical fiber groups and said photometric means has passed after the position of a sample on said carrier has been detected.

4,343,992

V-SHAPED CENTERING FIXTURE FOR OPTICAL ENCODERS

Anton J. Blaser, 700 E. Mason, Santa Barbara, Calif. 93103

Filed Sep. 8, 1980, Ser. No. 185,142
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **4 Claims**



1. An optical encoder assembly and centering fixture to be used on a motor shaft of given diameter, including, in combination:

(a) a mounting member having a circular periphery with a light source adjacent to a point on said periphery and having a central opening of larger size than said given diameter of said shaft so as to surround such shaft without touching the shaft when the mounting member is secured to the motor, and wherein said light source is positioned at a proper radial distance from the axis of said shaft so as to fall into alignment with the remaining components of the assembly only when said mounting member is centered on the motor with said shaft extending through said central opening in exact concentric relationship with said circular periphery, said circular periphery having first and second circumferentially spaced radial slots in exact radial alignment with the geometrical center of said circular periphery and defining a given angle between radial lines drawn from said center to said slots; and

(b) a centering fixture comprising a V-shaped element having a bore at the vertex at the V of diameter corresponding to said given diameter of said shaft to receive said shaft in a friction fit, said arms of the V-shape extending radially in alignment with the center of said bore at said given angle and for a radial distance at least equal to the radius of said circular periphery

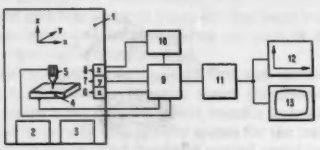
whereby when said motor shaft is received in said bore and the ends of the arms of the V-shaped received in said slots of said mounting member, said mounting member is centered and its circular periphery precisely concentric with said shaft so that it may be then secured to said motor with assurance that it will be in proper alignment with the remaining components of said encoder when the same are assembled after removing said centering fixture.

4,343,993

SCANNING TUNNELING MICROSCOPE

Gerd Binnig, and Heinrich Rohrer, both of Richterswil, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 12, 1980, Ser. No. 186,923
Claims priority, application Switzerland, Sep. 20, 1979, 8486/79
Int. Cl.³ G01N *23/00*
U.S. Cl. 250—306 12 Claims



1. Apparatus for investigating surface structures utilizing the vacuum tunnel effect, comprising:

an ultra-high vacuum chamber which can be cooled down to a temperature close to absolute zero;

a fine conducting tip in said chamber;

means for positioning a conductive sample surface in said chamber sufficiently close to said conducting tip that tunnelling current flows between said tip and the sample surface;

means for scanning said tip across the sample surface at a tunneling distance while tunnelling current flows between said tip and the sample surface;

means for measuring a tunnel effect variable between said tip and the sample surface while said tip is scanned across the surface;

means for automatically controlling the separation distance between said tip and the sample surface in response to the measured tunnel effect variable such that the measured tunnel effect variable remains substantially constant during scanning; and

means for graphically displaying the spatial coordinates of said scanning tip to produce a topological map of said surface.

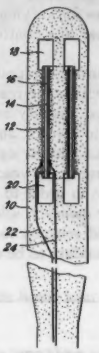
4,343,994

PARTICLE DETECTOR AND ITS PRODUCTION PROCESS

Paul Farcy, Clamart, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Mar. 21, 1980, Ser. No. 132,403
Claims priority, application France, Mar. 29, 1979, 79 07924
Int. Cl.³ G01T *3/00;* H01J *47/12*
U.S. Cl. 250—390 18 Claims

1. A detector, for neutrons and the like, comprising a closed ceramic body in a single part within which are sealingly embedded two concentric tubular electrodes which define between them an annular chamber filled with pressurized gas,



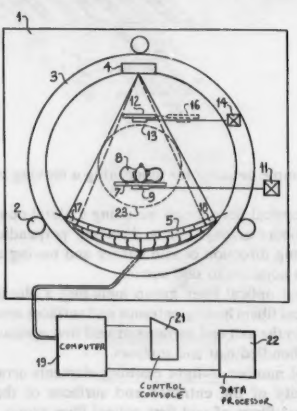
and electrical wires connecting the electrodes to the outside of the body.

4,343,995

METHOD AND APPARATUS FOR AUTOMATICALLY CENTERING AN OBJECT FOR TOMODENSITOMETRIC EXAMINATION

Remy Klausz, Paris, France, assignor to Compagnie Generale de Radiologie, Paris, France

Filed Jul. 20, 1979, Ser. No. 58,980
Claims priority, application France, Jul. 27, 1978, 78 22268
Int. Cl.³ A61B *6/00, 6/02;* G06F *15/42*
U.S. Cl. 278—21 5 Claims



1. A method for positioning an object to be examined in a tomodensitometric apparatus, said apparatus including a source of a fan-shaped beam of radiation and a plurality of radiation detectors disposed along a line, said source and said detectors being located on a rotatable mount which is capable of rotation about an axis normal to a plane defined jointly by said source and said detectors, said apparatus further including a support for said object to be examined, said support being capable of motion in any direction as urged by a control element under the control of a controller which receives control information from a computer programmed by a control console and by an internal program and connected to receive signals from said detectors, and wherein, according to the invention, said method comprises the steps of:

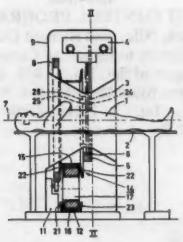
placing said object on said movable support;
positioning between said object and said source an opaque screen which prevents the radiation from said source from striking any except at least one of the two outermost-lying detectors along said line;
programming said computer so as to generate a control schedule which defines the direction and magnitude of displacements to be given to said movable support in dependence of the degree of attenuation of signals from said at least one of the two outermost-lying detectors during a rotation of said rotatable mount in a test cycle; and
executing a test cycle in which said rotatable mount is turned through one revolution; whereby said object is centered within the effective beam of said source for all relative angular positions thereof.

4,343,996

MEDICAL APPARATUS WITH CABLE GUIDE

Jan Kuipers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 30, 1977, Ser. No. 866,006
Claims priority, application Netherlands, Jul. 7, 1977, 7707541
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—21 **1 Claim**



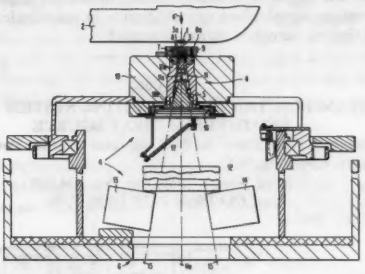
1. Medical apparatus comprising:
an X-ray radiation source which is rotatable relative to a fixed frame;
an electrical power supply;
a flexible cable connecting the source to the power supply;
a guide for the flexible cable, including a cylindrical inner drum, a cylindrical outer drum disposed concentric to and rotatable relative to the cylindrical inner drum, a rotatable cylindrical cable guide roller disposed between the concentrically disposed drums, the axis of the roller being parallel to the axes of the drums, the flexible cable passing around the roller, the cable being attached near one of its ends to one of the drums, the cable guide roller being retained between an outer surface of the inner drum and an inner surface of the outer drum and being positioned to roll along geometrical paths which are concentric with the inner drum and the outer drum;
an elastic material which is disposed on and at least partially covers the surface of the cable guide roller and which functions to stabilize the operation of the guide;
a second movable frame suspended on the inner drum and movable, with respect thereto, in a direction perpendicular to the axis of the drums, in which frame the radiation source is mounted;
a detector secured on the movable frame opposite the radiation source, a central ray from the radiation source intersecting the axes of the two drums and being parallel to the direction of movement of the frame;
wherein each of the two drums is shaped as a sector of a circular cylinder and includes a sector-shaped opening, the two openings being angularly aligned to define a free area, the radiation source being movable into the free area when the frame is moved relative to the inner drum.

4,343,997

COLLIMATOR ASSEMBLY FOR AN ELECTRON ACCELERATOR

Lothar Heinz, Neunkirchen, Fed. Rep. of Germany, assignor to Siemens Medical Laboratories, Inc., Walnut Creek, Calif.

Filed Jul. 14, 1980, Ser. No. 168,169
Int. Cl.³ A61N *5/10*; G21K *1/02*; H05H *7/00*
U.S. Cl. 250—505.1 **6 Claims**



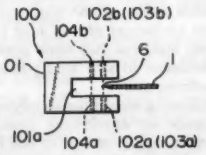
1. In an electron accelerator including a target exposed to an electron beam for the purpose of producing X-ray radiation, a collimator assembly for providing a flattened dose rate characteristic over the central region of the cross-section of the transmitted X-ray beam cone, a collimator shielding block in said collimator assembly for blocking undesired X-rays, at least two inserts comprising a material of high atomic number, one of said inserts being inserted into said collimator shielding block, each of said inserts having a stepped central opening and inner wall surfaces at the margin of the X-ray cone, said inner surfaces having annular grooves transverse to the X-ray radiation for providing a dose rate at the margin of the transmitted X-ray radiation cone which is relatively uniform and matched to the dose rate at the central region of the transmitted cone, whereby said grooves in said inner wall surfaces are cylindrical grooves, the diameter thereof increasing in the direction of said X-ray radiation, and whereby the width of said grooves in said X-ray radiation direction is between one and two centimeters, and means for easily interchanging said inserts in said collimator shielding block.

4,343,998

METHOD AND APPARATUS FOR DETECTING SEWING DEFECTS ON A STOCKING TOE CLOSER

Sukeo Mori, 17-2, Zeze 1-chome, Otsu-shi, Singa-ken, Japan, assignor to Sukeo Mori, Japan

Filed Feb. 25, 1980, Ser. No. 124,540
Claims priority, application Japan, Feb. 23, 1979, 54-020963
Int. Cl.³ G01N *21/88*
U.S. Cl. 250—563 **6 Claims**



1. Improved apparatus for detecting sewing defects on a stocking toe closer comprising a pair of photoelectric sensors arranged at spaced positions to define a detection area, said

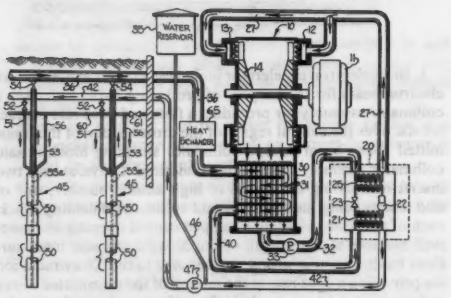
detection area aligned along the path of travel of the sew line on the toe section of a stocking, each of said photoelectric sensors including a light emitter arranged on one surface side of said toe section and a light receiver arranged on the other surface side of said toe section in axial alignment with said light emitter, said light emitters being activated when the leading end of said toe section arrives at the positions of said light emitters within said detection area, said light receivers photoelectrically converting the incident beams of light from said light emitters into electric detection signals whose magnitudes corresponds to the intensity of said incident beams, and a control circuit electrically connected to said light receivers and enabled to compare beginning portions of the electric detection signals from said photoelectric sensors to generate an operation signal when any difference in magnitude between the electric detection signals is sensed.

4,343,999

STEAM-ELECTRICAL GENERATING SYSTEM USING GEOTHERMAL HEAT SOURCE

Herman B. Wolf, Pineville, N.C., assignor to Duke Power Company, Charlotte, N.C.

Filed Nov. 4, 1980, Ser. No. 204,000
Int. Cl.³ F01K 7/38; F03G 7/04
U.S. Cl. 290—2 **8 Claims**



1. A system for generating electrical power characterized by a more efficient utilization of available energy supplemented by geothermal energy, said system comprising

(a) a steam turbine;

(b) an electric generator connected to said steam turbine and adapted to be rotated by said steam turbine for generating electricity;

(c) liquid-to-liquid heat pump means including a first heat exchanger for adding heat to a refrigerant circulating within the heat pump and a second heat exchanger for supplying heat from the refrigerant to a liquid to be heated;

(d) means for supplying steam to said turbine including steam conduit means connected to said second heat exchanger of said heat pump for receiving steam therefrom and to said steam turbine for supplying steam thereto, a condenser connected to said steam turbine for receiving steam therefrom and condensing such steam to a liquid, liquid conduit means connecting said condenser to said second heat exchanger of said heat pump, and pressure raising pump means in said liquid conduit means for supplying condensate to said heat pump for generation of steam therefrom; and

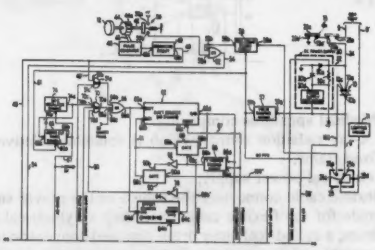
(e) liquid circulating means for supplying liquid coolant to said condenser for condensing steam from said steam turbine and for supplying heat to said first heat exchanger of said heat pump comprising a closed liquid circulating system including a source of liquid of sufficient volume to maintain the system substantially filled with liquid, first conduit means connected to said condenser for supplying liquid coolant to said condenser and connecting said condenser to said first heat exchanger of said heat pump for supplying said heat pump with liquid which has been heated by the condensation of the steam, second conduit means connected to said first heat exchanger of said heat pump for withdrawing liquid which has been cooled in said first heat exchanger of said heat pump, a plurality of heat sinks buried in the earth to a sufficient depth so as to be in heat exchange relationship with the subterranean water system of the earth and connected to said second conduit means for receiving cooled liquid therefrom for the addition of geothermal heat thereto and connected to said first conduit means for supplying liquid thereto, and means for circulating the liquid through said conduit means, said condenser, said first heat exchanger, and said heat sinks; whereby the heat transferred to the coolant during condensation of the steam from said turbine is recovered and is supplemented by geothermal heat from the earth for regeneration of the steam needed to operate said steam turbine.

4,344,000

POWER CIRCUIT CONTROL PROGRAMMABLE TIMER

Louis W. Schornack, Niles, and Richard Goldstein, Northbrook, both of Ill., assignors to Dynascan Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 22,453, Mar. 21, 1979. This application Mar. 20, 1980, Ser. No. 132,088
Int. Cl.³ H01H 43/04
U.S. Cl. 307—132 E **38 Claims**



22. In a programmable timer for controlling the operation of a controlled means, said timer including storage means having respective storage locations assigned to various time intervals where switch means turn-on or turn-off markers can be stored or retained to control said switch means, manually operable programming means for setting or retaining said turn-on and turn-off markers in storage locations corresponding to the desired time intervals involved, and means following the completion of the setting or retention of said markers in all of said storage locations for operating the timer in an automatic mode where the storage locations are automatically and synchronously accessed to control the operation of said controlled means in accordance with said markers, the improvement comprising automatic programming completion means which, upon the failure of the user to set or retain turn-on or turn-off markers in all of the storage locations of said storage means after a given time period, automatically sets turn-off markers in the remaining storage locations of said storage means and automatically operates the timer in said automatic mode of operation where said controlled means is controlled by the markers in said storage locations of the storage means assigned to the time intervals involved.

4,344,001

CLOCKING SIGNAL DRIVE CIRCUIT FOR CHARGE TRANSFER DEVICE

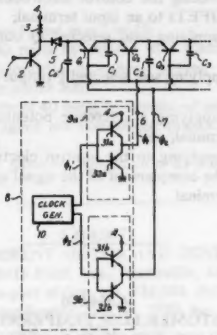
Takao Tsuchiya, and Mitsuo Soneda, both of Fujisawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,839

Claims priority, application Japan, Dec. 19, 1978, 53-157131; Dec. 19, 1978, 53-157134; Dec. 26, 1978, 53-163705; Apr. 23, 1979, 54-49946

Int. Cl.³ G11C *19/28;* **H03K** *17/60, 17/56, 5/00*

U.S. Cl. 307—221 D **21 Claims**



1. In a charge transfer device having clocking signal drive means for supplying a plurality of clocking signals, a plurality of successive capacitive storage means for sequentially holding a charge level representing a time sampled input signal, each of said capacitive storage means having a clocking electrode for receiving one of said clocking signals, and said charge level being transferred from one to another of said capacitive storage means in succession in response to said clocking signals; said clocking signal drive means comprising at least one clocking signal drive circuit which includes a clocking signal generator having an output at which said generator provides a clocking control signal, a pair of complementary transistors each having first, second and control electrodes, means for connecting control electrodes of said complementary transistors together and to said output of said clocking signal generator, and means for connecting the first electrodes of said complementary transistors together and to the clocking electrode of at least one of said capacitive storage means.

4,344,002

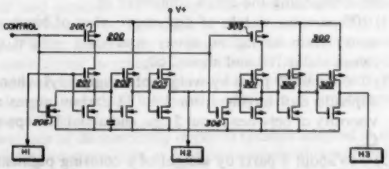
DETECTION CIRCUIT AND STRUCTURE THEREFOR

Robert L. Chao, Sunnyvale, Calif., assignor to Supertex, Inc., Sunnyvale, Calif.

Division of Ser. No. 880,035, Feb. 22, 1978, Pat. No. 4,215,281. This application Nov. 13, 1979, Ser. No. 93,516

Int. Cl.³ H03K *5/02*

U.S. Cl. 307—270 **3 Claims**



1. An output driver circuit formed as an integral part of a CMOS circuit chip including, in combination:

first and second high gain CMOS circuit amplifier sets, each including three pairs of first and second complementary field effect transistors, each pair connected in series between first and second voltage supply terminals, and means connecting a common junction of the transistors of each pair, except the third pair, to the common interconnected gates of the next succeeding pair of transistors in each set;

means for applying input signals in common to the gates of the first pair of transistors of the first set,

a common junction of the third pair of transistors of the first set being connected in common to the gates of the transistors of the first pair of the second set;

means for obtaining output signals from a common junction of the transistors of the third pair of transistors in said second set and the common junction of the transistors of the third pair of transistors of said first set; and

control means responsive to a control signal and coupled to the first pairs of transistors in each amplifier set for disabling said first pairs when said control signal is in a first condition and for enabling said first pairs when said control signal is in a second condition.

4,344,003

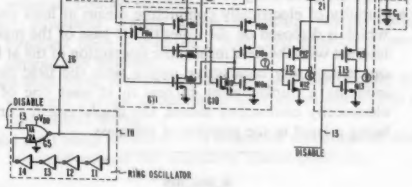
LOW POWER VOLTAGE MULTIPLIER CIRCUIT

Joseph W. Harmon, East Brunswick, N.J., and James H. Atherton, Freeport, Ill., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 4, 1980, Ser. No. 174,928

Int. Cl.³ H02M *3/155;* **H03K** *5/02, 17/687*

U.S. Cl. 307—296 A **8 Claims**



1. The combination comprising:

a capacitor having first and second terminals;

an inverter having first and second power terminals for the application thereto of first and second operating voltages, respectively, and having an input and an output;

means connecting the output of the inverter to said first terminal of said capacitor;

input means for applying input signals to said input of said inverter for switching the voltage produced at its output between two levels corresponding to said first and second voltages;

first and second transistors; each transistor having first and second electrodes defining the ends of a conduction path and a control electrode;

means connecting the conduction path of said first transistor between the second terminal of said capacitor and said second power terminal;

means connecting the conduction path of said second transistor between said second terminal of said capacitor and a circuit output terminal;

means responsive to said input signals, said means being coupled to the control electrodes of said first and second transistors for: (a) in response to input signalsof one transition, first turning-off said first transistor, and then, secondly, switching the voltage produced at said output of said inverter from said first to said second level, and concurrently, turning-on said second transistor; and (b) in response to said input signals making a second transition

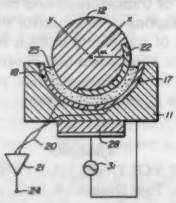
opposite to said one transition, turning-off said second transistor and then turning-on said first transistor.

4,344,004

DUAL FUNCTION TRANSDUCER UTILIZING DISPLACEMENT CURRENTS

Shigeo Okubo, Menlo Park, Calif., assignor to Design Professionals Financial Corp., San Francisco, Calif.

Filed Sep. 22, 1980, Ser. No. 189,546
Int. Cl.³ H04R *19/00*
U.S. Cl. 307—400 **11 Claims**



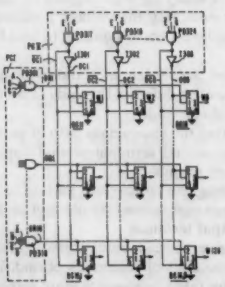
1. Apparatus for detecting the position of a mass comprising:
a base;
a mass disposed above the base and ohmically separated from the base;
means for periodically inducing relative motion between the mass and the base;
at least one field means disposed on one of the base or the mass for generating an electric field; and
a plurality of electrically conductive means at least one of which is disposed on the other of the base or the mass to interact with the field means, the interaction of the at least one electrically conductive means with the field means inducing a displacement current in at least one of the electrically conductive means, the displacement current being related to the position of the mass.

4,344,005

POWER GATED DECODING

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,363
Claims priority, application United Kingdom, Jul. 18, 1978, 30169/78
Int. Cl.³ H03K *19/177, 19/094, 19/21*; G11C *7/00*
U.S. Cl. 307—463 **13 Claims**



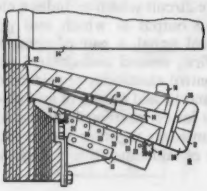
1. In a matrix decoder for decoding N variables wherein X of the N variables are decoded separately to produce Q outputs and the remaining N−X variables are decoded separately to produce P outputs, an improved buffer decoder stage for logically combining a selected one of the Q outputs with selected one of the P outputs comprising:
a first insulated-gate field-effect transistor (IGFET) of first conductivity type, and second and third IGFETs of second conductivity type, each IGFET having a conduction path and a control electrode;
means connecting the conduction path of said first IGFET between a first power terminal and an output terminal;
means connecting the conduction paths of said second and third IGFETs in parallel between said output terminal and a second power terminal;
means connecting the control electrodes of said first and second IGFETs to an input terminal;
means for applying said selected Q output to said input terminal,
means for applying said selected P output to said first power terminal;
means for applying a reference potential to said second power terminal; and
means for applying to the control electrode of said third IGFET the complement of the signal applied to said first power terminal.

4,344,006

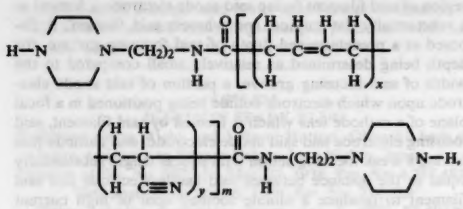
EPOXY-ELASTOMER LOW TEMPERATURE CURABLE, SOLVENTLESS, SPRAYABLE, STATOR WINDING ADHESIVE-BRACING COMPOSITIONS

Morris A. Mendelsohn, Wilkins Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 134,730, Mar. 28, 1980, Pat. No. 4,298,656.
This application Jun. 29, 1981, Ser. No. 278,523
Int. Cl.³ H02K *15/12*
U.S. Cl. 310—43 **7 Claims**



6. A turbine generator comprising a stator core assembly, a rotor assembly mounted to rotate within the stator core assembly, and a coated stator end winding assembly, the improvement consisting of the stator end winding assembly coating, which is effective to brace the end winding assembly, said coating comprising the cured admixture of:
(1) 100 parts by weight of diglycidyl ether of bisphenol A epoxy resin having an epoxy equivalent weight of between about 160 and about 260;
(2) 0 to about 30 parts by weight of a diglycidyl ether of an aliphatic diol having from 2 to 12 carbon atoms and a viscosity of between about 5 cps. and about 100 cps. at 25° C.;
(3) 0 to about 8 parts by weight of a coloring pigment;
(4) about 0.5 to about 4.0 parts by weight of SiO_2 thixotropic agent;
(5) about 100 to about 200 parts by weight of a secondary amine terminated butadiene/acrylonitrile reactive liquid polymer having a viscosity at 27° C. of between 150,000 cps. and 200,000 cps., and having the chemical formula:



where x=3 to 7, y=1, and m=7 to 13;

(6) 0 to about 40 parts by weight of a plasticizer for the butadiene/acrylonitrile polymer, having a molecular weight of over about 200;

(7) about 20 to about 40 parts by weight of an amine terminated curing agent not containing cyanoethylene chain segments; and

(8) 0 to about 8 parts by weight of a BF_3-amine complex curing agent.

4,344,007

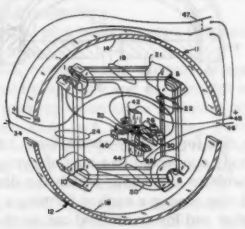
DIRECT CURRENT MOTOR AND GENERATOR

Dallas B. Brown, 1416 Pratt Ave., Huntsville, Ala. 35801

Continuation-in-part of Ser. No. 926,894, Jul. 21, 1978, abandoned. This application Jun. 27, 1980, Ser. No. 163,864

Int. Cl.³ H02K *37/00*

U.S. Cl. 310—46 **1 Claim**



1. A direct current device comprising:

at least one pair of oppositely positioned, stationary, magnetic field poles:

a rotatable circular armature frame and an even number of at least four equal angularly spaced winding slots positioned about said frame;

a circular commutator rigidly connected to said armature frame, and having a like number of insulated commutator segments equally angularly oriented around said commutator;

at least two pairs of coils of first and second coils to the pair;

the first and second coils of a pair being positioned generally in parallel planes, lying on opposite sides of the center line of said commutator and armature frame, and each coil being wound through a pair of said slots, the coils of a said pair being electrically connected together and to a pair of commutator segments lying diametrically on opposite sides of of said commutator, said last-named segment lying along a line which intersects said planes at approximately equal angles;

a first pair of diametrically opposed brushes adapted to make sliding contacts with at least one commutator segment per brush, and means for applying a source of direct current potential between said brushes; and

a second set of diametrically opposed brushes positioned angularly between said first-named brushes and adapted to make sliding contacts with at least one commutator segment per brush, and means for obtaining an output potential from across said second set of brushes.

4,344,008

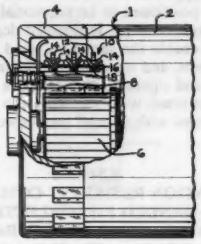
BRUSH SPRING TENSION ADJUSTMENT FOR DYNAMOELECTRIC MACHINE

Jeffrey T. Major, Cygnet; Nelson S. Gibson, III, and Jerry L. Young, both of Toledo, all of Ohio, assignors to Eltra Corporation, Toledo, Ohio

Filed Apr. 30, 1980, Ser. No. 145,112

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **10 Claims**



1. A removable brush holder for use in a dynamoelectric machine having an end frame and an armature contact surface and means for retaining said brush holder in operative position adjacent to said armature contact surface, comprising:

means for making electrical contact to said brush holder;

a bus bar for making electrical contact from said brush holder to brushes of said brush holder;

a brush box for slidably retaining said brushes;

adjustable spring means for urging said brushes against said armature contact surface;

said adjustable spring means including wound spring mounted upon a shaft of a lever and adapted to press against said brushes;

said shaft being rotatably mounted in said brush holder and having a portion cooperating with an intermost coil of said wound spring;

said shaft being provided with means for retaining said shaft in one of at least two angularly spaced positions.

4,344,009

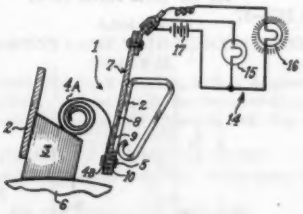
BRUSH WEAR INDICATOR FOR A DYNAMOELECTRIC MACHINE BRUSH

Kenneth R. Reynolds, North East, Pa., assignor to General Electric Co., Schenectady, N.Y.

Filed Sep. 4, 1980, Ser. No. 183,896

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—242 **6 Claims**



1. A brush wear indicator comprising a brush holder for supporting a brush in sliding relationship thereto, a self-winding spring having one of its ends mounted in fixed position relative to the brush holder and having a coiled portion that is operable to apply a biasing force to a brush supported in said holder thereby biasing one end of the brush into engagement with a rotatable electrical conductor positioned adjacent to the

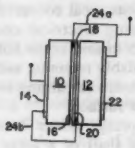
holder, in combination with a circuit board comprising a dielectric member, a plurality of electrical contacts mounted at spaced points on said dielectric member, a plurality of electric terminals mounted at spaced points on said dielectric member, and electric circuit means connected to complete separate circuits between each of said contacts and a respective one of said terminals associated therewith, all of said contacts being positioned to be engaged by said spring responsive to the spring being extended to apply a biasing force to a relatively unworn brush supported in said holder and at least some of said contacts being positioned to be sequentially disengaged from the spring responsive to predetermined degrees of brush wear occurring that enable the spring to wind up and bend away from said contacts, and signal means electrically connected to said terminals and operable to indicate a different predetermined degree of brush wear responsive to said spring moving out of engagement with each of the respective contacts.

4,344,010

ACCELERATION RESISTANT COMBINATION OF OPPOSITE-HANDED PIEZOELECTRIC CRYSTALS

John R. Vig, Colts Neck, and Arthur D. Ballato, Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 19, 1979, Ser. No. 86,504
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—361 **19 Claims**



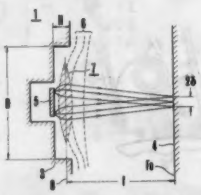
1. A composite crystal structure comprising a left and right handed pair of crystals positioned adjacent one another and electrically coupled to each other, one of said crystals having three axes disposed in anti-parallel relationship with respect to the corresponding axes of the other crystal whereby the effect of acceleration in all directions on the resonant frequency of the composite structure is minimized.

4,344,011

X-RAY TUBES

Tadashi Hayashi, Mobara, and Setsuo Nomura, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,268
Claims priority, application Japan, Nov. 17, 1978, 53-141157
Int. Cl.³ H01J *35/00, 29/46*
U.S. Cl. 313—57 **5 Claims**



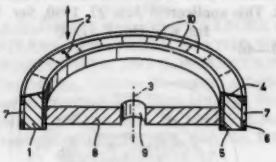
1. An X-ray tube for producing a minute focused spot of high current density comprising a cathode electrode including a filament for emitting electrons and a focusing electrode having a focusing groove adapted to contain said filament, and an anode electrode opposing said cathode electrode adapted to be maintained at a high potential which is positive relative to said filament, wherein a relatively large electron emitting region of said filament facing said anode electrode is formed as a substantially flat surface, and wherein said filament is disposed at a predetermined depth of said focusing groove, the depth being determined as relatively small compared to the width of said focusing groove, a portion of said anode electrode upon which electrons collide being positioned in a focal plane of a cathode lens which is formed by said filament, said focusing electrode and said anode electrode, said cathode lens having a weak focusing action with a focal length substantially equal to the distance between said anode electrode and said filament to produce a minute focused spot of high current density.

4,344,012

ANODE DISC FOR A ROTARY-ANODE X-RAY TUBE

Horst Hübner, Kesselstrasse 40; Bernhard Lersmacher, Schlossweilerstrasse 31, both of 5100 Aachen; Hans Lydtin, Am Goepelschacht 9, 5190 Stolberg, and Rolf Wilden, Brandstrasse 56, 5106 Roetgen, all of Fed. Rep. of Germany

Filed Mar. 11, 1980, Ser. No. 129,501
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910138
Int. Cl.³ H01J *35/04*
U.S. Cl. 313—60 **11 Claims**



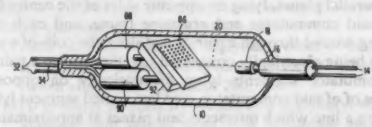
1. An anode disc for a rotary-anode X-ray tube, comprising a supporting body connected to a ring of pyrographite which is concentric with an axis about which the disc is rotated in operation, said ring having a surface forming a focal path and surfaces of higher and lower thermal conductivity, characterized in that the surfaces of higher thermal conductivity extend parallel to the axis of rotation.

4,344,013

MICROFOCUS X-RAY TUBE

Robert S. Ledley, 1022 Lagrande Rd., Silver Spring, Md. 20903

Continuation-in-part of Ser. No. 87,374, Oct. 23, 1979, Pat. No. 4,281,269, which is a continuation-in-part of Ser. No. 791,328, Apr. 27, 1977, abandoned. This application Jul. 27, 1981, Ser. No. 286,827
Int. Cl.³ H01J *35/08*
U.S. Cl. 313—60 **32 Claims**



1. In a reusable microfocus X-ray tube adapted to generate a relatively large number of X-rays in a relatively short period of time using a narrowly focused electron beam, said microfocus X-ray tube comprising:

(a) first means for producing a dense, narrow electron beam;

(b) a target anode; and

(c) second means for moving said target anode so that it is stationary during production of X-rays but a fresh portion of the surface of said target anode is presented to the

electron beam each time the X-ray tube is used, the improvement wherein said X-ray tube further comprises:

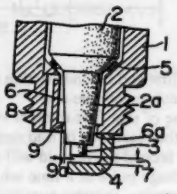
(d) third means for collecting charged particles boiled off said target anode by the electron beam.

4,344,014

IGNITION SPARK PLUG

Toshiharu Iwata, Aichi, and Tadashi Hattori, Okazaki, both of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 892,137, Mar. 31, 1978, Pat. No. 4,267,482.
This application Dec. 8, 1980, Ser. No. 214,029
Claims priority, application Japan, Apr. 7, 1977, 52-40128; Apr. 21, 1977, 52-46533; Aug. 5, 1977, 52-94426
Int. Cl.³ H01T *13/20*
U.S. Cl. 313—143 5 Claims



1. A spark plug for use with a spark ignition-type internal combustion engine which has a combustion chamber,

said spark plug comprising:

a tubular metal plug body having a longitudinal bore with an open end;

an insulator having a leg portion extending centrally within said plug body and out through said open end;

a ring of packing mounted in said plug body distally of said open end, said insulator leg portion extending through said ring of packing and being supported upon said plug body via said ring of packing material;

said plug body bore, axially outwardly of said ring of packing to said open end being radially oversize relative to said insulator leg portion axially outwardly of said ring of packing to said open end, thereby defining an annular space within said plug body bore, extending from said ring of packing to said open end;

a center electrode extending from within said insulator leg portion to axially outwardly of said open end so as to be directly exposed, in use, to said combustion chamber;

a ground electrode mounted on said plug body and extending therefrom axially outwardly of said open end and laterally into gapped adjacency with said center electrode;

means defining at least one passageway formed in said plug body, said at least one passageway having:

a first portion extending parallely of said center electrode, one end thereof being positioned for open communication, in use, with said engine combustion chamber,

and

a second portion extending transversely of said center electrode, one end thereof communicating with a respective other end of said first portion and another end thereof being in open communication with said annular space adjacent said ring of packing; and

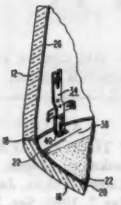
a restrictor of ring shape provided at said open end for restricting the flow of a fresh mixture for combustion to said annular space from said open end, said open end being restricted by a restriction gap thereby defined between said center electrode and said restrictor which, in use, causes some burned gas to remain within said annular space near the restriction gap when such fresh mixture for combustion is introduced to said annular space through said at least one passageway.

4,344,015

SCREEN CONTACT MEANS FOR A CATHODE RAY TUBE

Frank D. Marschka, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 18, 1980, Ser. No. 179,154
Int. Cl.³ H01J *29/28, 29/88, 29/90*
U.S. Cl. 313—466 5 Claims



1. A cathode ray tube including an envelope comprising a funnel portion and a faceplate sealed together with a frit seal,

an electron gun within a neck portion of said funnel,

an electrical terminal extending through said funnel adjacent to said seal,

a conductive coating on the interior surface of said funnel,

a phosphor screen layer on a first portion only of said faceplate,

an aluminum conductive layer on said phosphor screen layer and on at least a portion of the remaining area of said faceplate not covered by said phosphor screen, that portion of said aluminum layer on said remaining faceplate portion constituting a contact area for said phosphor screen,

a screen contact assembly comprising:

(a) a relatively stiff conductive strip member attached at a proximal end thereof to said terminal with a distal end thereof being disposed adjacent to said contact area of said aluminum layer,

(b) a first relatively flexible contact member attached at a proximal end thereof to said distal end of said strip member, and

(c) a second relatively flexible contact member comprising an elongated element disposed orthogonally to and attached at its midpoint to said strip member, said second contact member having two distal ends which are in spring pressure contact with said conductive coating on said funnel; and

a foil member attached to said screen contact assembly and pressed against said contact area of said aluminum layer by spring pressure of said first flexible contact member.

4,344,016

FLUORESCENT LAMP WITH SILICON DIOXIDE COATING

Roland Hoffmann, and Ernst Panofski, both of Augsburg, Fed. Rep. of Germany, assignors to Patent-Treuhand-Gesellschaft fur elektrische Gluhampen mbH, Munich, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 123,962
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 2908890
Int. Cl.³ H01J *61/35;* B05D *5/06*
U.S. Cl. 313—489 8 Claims

1. An improved low pressure mercury vapor discharge lamp, comprising a glass envelope having an electrode at each end with an inner wall phosphor coating substantially completely covering a coating of silicon dioxide SiO_2 which is between the phosphor coating and the envelope,

the improvement comprising the SiO_2 in said coating being in the form of SiO_2 particles having a particle size between

about 2 and 100 nm and said SiO_2 particles containing coating being in an amount between 0.05 and 0.7 mg of

SiO_2 particles in said coating per square centimeter of glass envelope which is coated.

4,344,017

CATHODE RAY TUBE USED AS LIGHT SOURCE

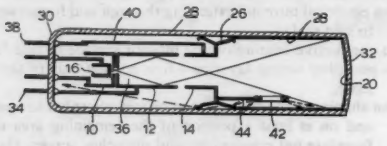
Eiyo Nosaka, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,544

Claims priority, application Japan, May 8, 1979, 54-55918; Dec. 17, 1979, 54-175223[U]

Int. Cl.³ H01J *29/46, 29/56*

U.S. Cl. 315—16 **4 Claims**



1. A cathode ray tube for use as a light source, comprising an electron gun formed of a cathode electrode for emitting an electron beam, a first grid electrode, a second grid electrode having an axial length greater than the inside diameter thereof, and a third grid electrode, and an envelope means enclosing said electron gun and grid electrodes and having a phosphor screen constituting one end of said envelope means opposed to said electron gun downstream of said grid electrodes, said third grid electrode being electrically connected to said phosphor screen, a first voltage supply means connected to said cathode electrode for causing said cathode to emit a current sufficient to cause said phosphor screen to luminesce with the desired luminescence, a further voltage supply means connected to said second and third grid electrodes for applying to said third grid electrode a voltage as high as possible for the desired luminescence of said screen and for applying to said second grid electrode a voltage substantially less than the voltage applied to said third grid electrode, the length of said second grid electrode being sufficient for, at the voltages of said second and third grid electrodes, forming with said third grid electrode an electron lens for focussing said electron beam one before said beam reaches said phosphor screen and then diverging said beam for just filling a predetermined area of said screen with the diverged beam at the desired luminescence.

4,344,018

HIGH PRESSURE METAL VAPOR DISCHARGE LAMP

Akio Inada, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1980, Ser. No. 152,542

Claims priority, application Japan, Jun. 18, 1979, 54-75716

Int. Cl.³ H01J *7/44, 13/46, 19/78, 29/96*

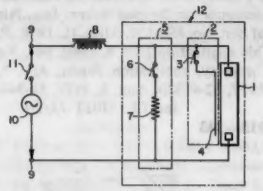
U.S. Cl. 315—47 **6 Claims**

1. A starting device for a high pressure metal vapor discharge lamp which includes an inner envelope containing therein spaced electrodes, and an outer envelope surrounding said inner envelope, comprising:

(a) a first starting aid for lowering the starting voltage comprising a conductor disposed adjacent to the outer wall of said inner envelope;

(b) a first thermal switch coupling said conductor to one of said electrodes;

(c) and a second starting aid for generating a high voltage pulse comprising a resistive element and a second thermal switch coupled between said electrodes;



(d) both of said first and second starting aid circuits disposed within said outer envelope; and

(e) the reset time of said first thermal switch selected to be shorter than the reset time of said second thermal switch, whereby said second starting aid will not be able to generate a high voltage pulse at a time when said first starting aid is not operating, thereby avoiding the dangers of dielectric breakdown within said discharge lamp.

4,344,019

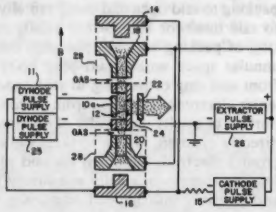
PENNING DISCHARGE ION SOURCE WITH SELF-CLEANING APERTURE

Basil F. Gavin, Berkeley; Robert A. MacGill, Richmond, and Raymond K. Thatcher, El Cerrito, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 10, 1980, Ser. No. 205,398

Int. Cl.³ H01J *27/04*

U.S. Cl. 315—111.81 **14 Claims**



3. In apparatus adapted for producing an ion beam from a source of selected material that is normally in a solid state, said apparatus being adapted for operation in a magnetic field to produce a Penning discharge, the combination comprised of

first and second dynodes disposed opposite each other to define a space in between, said first dynode having said material and said second dynode having an aperture for said beam to exit from said space,

means for maintaining a support gas in said space,

two opposing cathodes one at each end of said space for producing high power pulsed electron beams directed into said space,

two accelerating anodes, one adjacent each cathode for accelerating said electron beams into said space,

means for supplying an operating pulse to said cathodes for a predetermined period,

means for supplying an operating pulse to said first dynode for a first major part of said predetermined period,

means for supplying an operating pulse to said second dy-

node for a second minor part of said predetermined period,

whereby said second dynode functions as a sputtering electrode during said second minor part of said predetermined period for removal of material sputtered from said first dynode and deposited on said second dynode during said second minor part of said predetermined period.

4,344,020

ELECTRONIC FLASH DEVICE CAPABLE OF AUTOMATIC FLASH DURATION ADJUSTMENT

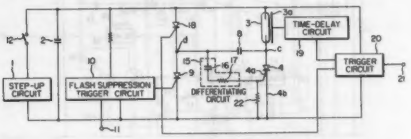
Katsumi Horinishi, Hashimoto, Japan, assignor to West Electric Co., Ltd., Osaka, Japan

Filed Sep. 4, 1980, Ser. No. 184,043

Claims priority, application Japan, Sep. 4, 1979, 54-113730; Sep. 4, 1979, 54-113731

Int. Cl.³ H05B *41/34*

U.S. Cl. 315—241 P **3 Claims**



1. An electronic flash device capable of automatic flash duration adjustment comprising

a flash lamp for converting the energy stored on a main capacitor into light,

a main switching element connected in series to said flash lamp and having a gate terminal,

a gate circuit connected to said gate terminal on said main switching element for controlling the conduction of said main switching element,

a commutation capacitor for commutating said main switching element so as to interrupt the discharge through said flash lamp after said flash lamp has been lighted,

a first auxiliary switching element connected to said commutation capacitor and adapted to be switched into the conduction state in response to the triggering signal produced when said flash lamp is lighted, thereby discharging said commutation capacitor so as to commutate said main switching element,

a time-delay circuit interconnected between a trigger gate for triggering said flash lamp and a trigger electrode of said flash lamp, and

a second auxiliary switching element connected in series to said main discharge capacitor through said commutation capacitor and said main switching element and adapted to be switched into the conduction state in response to the trigger signal from said trigger circuit, thereby switching said main switching element into the conduction state so as to recharge said commutation capacitor.

4,344,021

SYSTEM FOR COMPENSATING FOR TRANSFER CHARACTERISTIC VARIATIONS OF ELECTRON GUNS

Loren B. Johnston, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

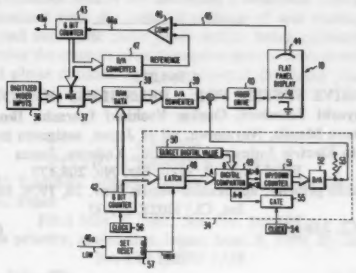
Filed Jul. 21, 1980, Ser. No. 170,742

Int. Cl.³ H01J *29/52*

U.S. Cl. 315—383 **16 Claims**

1. In a system for biasing the grids of electron guns in a display device by providing digital signals representative of brightness levels for biasing said electron guns, a circuit for establishing the values of the limits of said brightness levels to compensate for variations in the transfer characteristics of said guns comprising:

means for receiving said digital signals and at least one target signal representative of at least one of said brightness levels and for providing a control signal having a polarity representative of the polarity of the difference between said digital signal and said target signal;



and means for providing an adjustment signal having a polarity in accordance with the polarity of said control signal and applying said adjustment signal to said grid so that said grid is biased in accordance with said selected brightness level.

4,344,022

LINEAR MOTOR

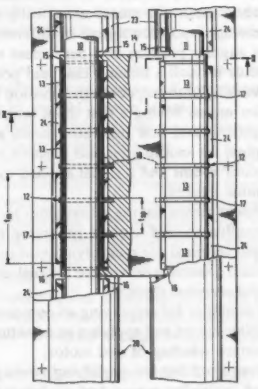
Johann von der Heide, Mönchsweiler, Fed. Rep. of Germany, assignor to Papst Motoren KG, St. Georgen, Fed. Rep. of Germany

Filed Mar. 24, 1980, Ser. No. 133,122

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1979, 2912531

Int. Cl.³ H02K *7/06*

U.S. Cl. 318—38 **12 Claims**



1. A linear motor unit comprising a stator, an armature mounted for travel along the length of said stator, said stator including an inner flux-carrying structure and an outer flux-carrying structure, said inner flux-carrying structure having an elongated rod; a plurality of pole areas (pitches/domains) constituted by sets of permanent magnets concentrically positioned within said outer flux-carrying structure and juxtapositioned in the direction of elongation of said rod, said permanent magnets of said sets within one pole area being radially magnetized in the same direction, the magnetic polarity of said successive pole areas alternating proceeding in the direction of armature travel from one of said pole areas to the next; and said armature being slidably positioned on said rod and carrying a plurality of coils spaced one from another in said direction of

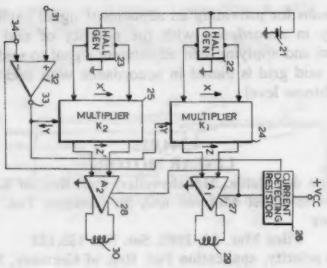
elongation and concentrically positioned within said sets of permanent magnets, said coils being energized periodically and in a cyclical sequence to provide a motive force for the movement of said armature along said rods.

4,344,023

DRIVE SYSTEM FOR A BRUSHLESS DC MOTOR

Nobuyoshi Yokobori, Osaka; Yoshiaki Igarashi, Ikoma, and Tetsuo Maeda, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 19, 1980, Ser. No. 208,477
Claims priority, application Japan, Nov. 24, 1979, 54-152325
Int. Cl.³ H02K *29/00*
U.S. Cl. 318—254 6 Claims



1. A drive system for a brushless dc motor, comprising:

first and second generator means electrically displaced by 90° for generating position signals in differential mode by sensing an angular position of a permanent magnet rotor of said motor in such a manner that said position signals vary sinusoidally with respect to the position of said rotor;

first multiplier means having a first input terminal differentially coupled to said first generator means and a second input terminal for multiplying said position signal of said first generator means and a signal applied to said second input terminal thereof;

second multiplier means having a first input terminal differentially coupled to said second generator means and a second input terminal for multiplying said position signal of said second generator means and a signal applied to said second input terminal thereof;

a first driver amplifier for amplifying an output signal of said first multiplier means and applying an armature current to a first armature winding of said motor;

a second driver amplifier for amplifying an output signal of said second multiplier means and applying an armature current to a second armature winding of said motor;

current detector means for detecting a sum total of an absolute value of said armature current of said first and second armature windings; and

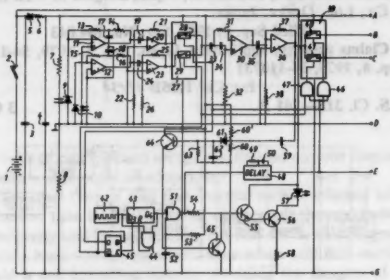
error amplifier means for amplifying the difference between an output signal of said current detector means and a torque control input, said error amplifier means being coupled to said second input terminals of said first and second multiplier means in parallel, whereby the magnitude of said armature current in total is determined by said torque control input, and the sharing rate of said armature current in total among said first and second armature windings is determined by said first and second generator means in accordance with said position signals.

4,344,024

DIGITAL CONTROL SYSTEM FOR AUTOMATIC-FOCUS CAMERAS

Istvan Cocron, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 166,093, Jul. 3, 1980, Pat. No. 4,314,187.
This application Jun. 11, 1981, Ser. No. 272,557
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2928142
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—640 7 Claims



1. In a digital automatic focusing system for use in cameras and the like which utilizes

a clocked radiation transmitter emitting pulses of radiation with a fixed frequency, amplitude and pulse duration,

like first and second radiation receivers receiving the pulses and generating first and second received signals corresponding thereto, and

a signal processing network processing the first and second received signals so as to make them distinguishable from background radiation and electrical noise,

an improvement for converting the first and second received signals to digital signals comprising:

a first integrator connected to the signal processing network and responding to the first received signal after it has been processed therein and producing a first analog signal which is a time-integrated transformation of the first received signal;

a second integration connected to the signal processing network and responding to the second received signal after it has been processed therein and producing a second analog signal which is a time-integrated transformation of the first received signal;

a first comparator stage connected to the first integrator and having a first threshold value which is large as compared to pulse amplitude, the first comparator stage operating in a manner that a first digital input signal is produced which is characteristic of the first analog signal, with the first digital input signal being logically high when the first analog signal exceeds the first threshold value and being logically low otherwise;

a second comparator stage connected to the second integrator and having a second threshold value which is large as compared to pulse amplitude, the second comparator stage operating in a manner that a second digital input signal is produced which is characteristic of the second analog signal, with the second digital input signal being logically high when the second analog signal exceeds the second threshold value and being logically low otherwise;

a first means cooperating with the first integrator so as to define an integration period over which time-integration takes place, which integration period is long as compared with pulse duration of the pulse emitted by the radiation transmitter;

a second means cooperating with the second integration so as to define a like integration period; and

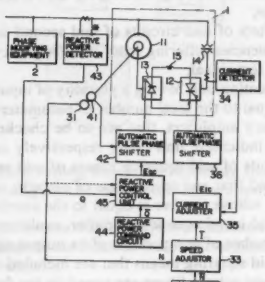
a secondary clock which is clocked in a fixed place and frequency relationship with respect to the transmitter, the secondary clock cooperating with the first means and the second means so as to clock the first digital input signal and the second digital input signal.

4,344,025

MOTOR CONTROL SYSTEM

Toshiaki Okuyama; Yuzuru Kubota; Hiroshi Nagase, all of Hitachi, and Katsunori Suzuki, Takahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,725
Claims priority, application Japan, Sep. 4, 1978, 53-107617
Int. Cl.³ H02P 5/40
U.S. Cl. 318—729 9 Claims



1. A motor control system comprising:

a motor load equipment connected to an AC power source having a motor consuming power supplied from the AC power source and means connected to said motor including first and second converters connected in series for controlling the power to be consumed by the motor through control of the firing angle of said first and second converters;

phase modifying equipment connected to the power source and consuming a leading reactive power for compensating for a lagging reactive power at rated load running consumed by said motor load equipment;

a speed detector for detecting the speed of the motor;

a speed command circuit for providing a speed command signal for controlling the speed of the motor;

a speed adjustor for producing a current command value in accordance with a signal representing the difference between the speed detector output and the speed command signal;

a current detector for detecting the current flowing through said first and second converters;

a current adjustor for producing a first firing phase command signal in accordance with a signal representing the difference between the output of said current detector and the current command value;

a first automatic pulse phase shifter for controlling the firing phase of said first converter in response to said first firing command signal;

a second automatic pulse phase shifter for controlling the firing phase of said second converter;

a reactive power detector for producing an electrical signal corresponding to the reactive power consumed by said motor load equipment and/or said phase modifying equipment;

a reactive power command circuit for providing an electrical signal of a reactive power command value corresponding to that consumed by said motor load equipment in the rated load operation;

a reactive power control unit for applying a second firing phase command signal to said second automatic pulse phase shifter in accordance with a signal representing the difference between an electrical signal corresponding to said reactive power and said lagging reactive power command; and

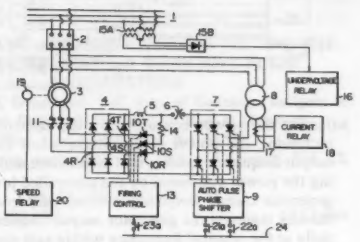
phase detector means for detecting a reference phase synchronized with the induced voltage of said motor, said second automatic pulse phase shifter being connected to receive the outputs of said reactive power control unit and said phase detector means to control the firing phase of said second converter.

4,344,026

STATIC SCHERBIUS SYSTEM

Takayuki Yoshioka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 4, 1981, Ser. No. 240,558
Claims priority, application Japan, Mar. 5, 1980, 55/26648
Int. Cl.³ H02M 1/18
U.S. Cl. 318—806 5 Claims



1. A static Scherbius system comprising:

(a) an induction motor supplied with power from an AC power source;

(b) a multi-phase full-wave rectifier circuit of Gratz connection for rectifying the secondary voltage of said induction motor;

(c) an inverter converting the DC output from said full-wave rectifier circuit into an AC equivalent to feed back the same to said AC power source;

(d) a DC intermediate circuit connecting said full-wave rectifier circuit to said inverter;

(e) a smoothing reactor disposed in one of DC buses of said DC intermediate circuit for smoothing the direct current;

(f) at least two series circuits each including series connected resistor means and thyristor means and connected between an inverter-side terminal of said smoothing reactor and at least two of AC-side terminals of said full-wave rectifier circuit;

(g) service interruption detecting means for detecting service interruption by continuously monitoring the state of the AC power supply voltage of said AC power source; and

(h) a firing control circuit applying a DC gate signal to said thyristor means upon detection of service interruption by said service interruption detecting means and ceasing application of the DC gate signal in a predetermined period of time after recovery of said AC power supply voltage after the service interruption.

4,344,027

FREQUENCY REGULATOR FOR SYNCHRONOUS GENERATORS

Robert F. Karlicek, 1920 Camino Centroloma, Fullerton, Calif. 92633

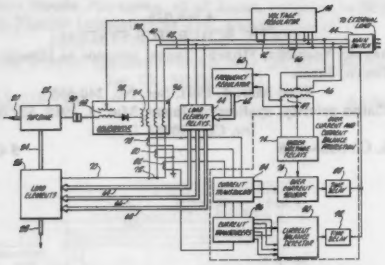
Filed Feb. 7, 1980, Ser. No. 119,581
Int. Cl.³ H02P 9/00
U.S. Cl. 322—7 11 Claims

1. A method for regulating the frequency of an alternating

current generator which is adapted to receive input mechanical power from a prime mover and which is adapted to provide output power to a variable remote load and to a controlled load, including the steps of:

determining the frequency of the generator output;

comparing the generator output frequency to a predetermined nominal frequency, said nominal frequency being fixed within a predetermined bandwidth range having an upper limit and a lower limit, the upper and lower limits being fixed with respect to generator output voltage, and



adjusting the power consumed by the controlled load by increasing the power consumption when the generator output frequency reaches said upper limit and by decreasing the power consumed by the controlled load when the generator output frequency reaches said lower limit, to thereby maintain the generator output frequency substantially at the nominal frequency within said predetermined bandwidth, said adjusting of the controlled load being after a predetermined applied time interval when the generator output frequency is outside the bandwidth range.

4,344,028

TESTING DEVICE FOR LOW-FREQUENCY AMPLIFIERS

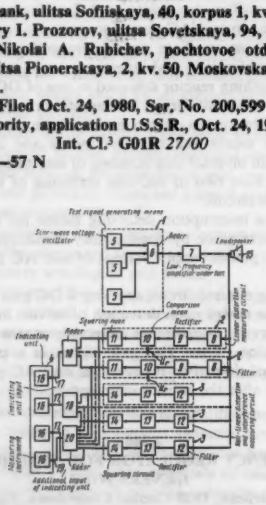
Mikhail U. Bank, ulitsa Sofiiskaya, 40, korpus 1, kv. 128, Leningrad; Valery I. Prozorov, ulitsa Sovetskaya, 94, kv. 21, Sarapul, and Nikolai A. Rubichev, pochtovoe otdelenie Mendeleeva, ulitsa Pionerskaya, 2, kv. 50, Moskovskaya oblast, all of U.S.S.R.

Filed Oct. 24, 1980, Ser. No. 200,599

Claims priority, application U.S.S.R., Oct. 24, 1979, 2824000

Int. Cl.³ G01R *27/00*

U.S. Cl. 324—57 N **2 Claims**



1. A testing device for low-frequency amplifiers, comprising:

sine-wave voltage oscillators having outputs intended for connection to the input of a low-frequency amplifier under test in order to generate a test signal including a plurality of components;

a first set of circuits intended for measuring linear distortion, said circuits of said first set comprising each a filter connected to an output of said low-frequency amplifier under test and tuned to the frequency of one of said components of said test signal, a rectifier, a comparison means designed for generating a signal proportional to the value of deviation of said component at this frequency from the desired value and a squaring means having an output, all of them connected in series;

a second set of circuits intended for measuring non-linear distortion and interference, said circuits of said second set comprising each a filter connected to the output of said low-frequency amplifier under test, a rectifier and a squaring means having an output, all of them connected in series;

said filters of said circuits of said second set being tuned to frequencies differing from said frequency components of said test signal;

an indicating unit having a plurality of inputs whose number is equal to the total number of parameters of said low-frequency amplifiers, that are to be checked, said inputs of said indicating unit being respectively connected to said outputs of said squaring means of said respective circuits of said first and second sets of circuits; and

adders whose number is equal to the number of parameters of said low-frequency amplifier, evaluated with the use of a member of components of its output signal, the outputs of said squaring means that are included into those of said circuits whose filters are tuned to the frequency components of the low-frequency amplifier output signal, characterizing one and the same parameter being connected to the respective inputs of said plurality of the inputs of said indicating unit through said adders.

4,344,029

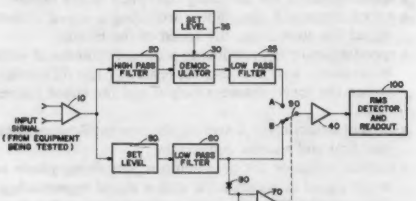
AUTOMATIC IM DISTORTION TEST SELECTOR

Richard C. Cabot, and Bruce E. Hofer, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 139,939, Apr. 11, 1980. This application May 11, 1981, Ser. No. 262,107

Int. Cl.³ G01R *27/00*

U.S. Cl. 324—57 R **16 Claims**



1. Apparatus for measuring distortion produced by electrical circuitry to which one of a plurality of different distortion test signals is applied, comprising

a plurality of distortion analyzers coupled to receive an output signal from the circuitry under test, each of said analyzers being configured for processing of a different one of said plurality of distortion test signals,

means coupled to the output of one distortion analyzer for determining the presence of a certain one of said test signals, and

means for switching the outputs of said analyzers in response to a determination that said certain test signal is present.

4,344,030

REMOTE DETECTOR OF FLAWS IN SURFACES USING MICRO-WAVES

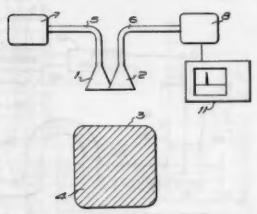
Alan P. Anderson, Sheffield, and John C. Jackson, Newark Notts, both of England, assignors to Lambda Industrial Science Limited, England

Filed Jan. 21, 1980, Ser. No. 113,970

Claims priority, application United Kingdom, Jan. 20, 1979, 7902132

Int. Cl.³ G01R *27/04*

U.S. Cl. 324—58.5 B 8 Claims



1. A non-destructive testing means for detecting flaws in a material surface moving relative to said testing means comprising

a transmitter of plane-polarised microwave radiation directing said radiation as an incident beam for scanning said surface therewith,

a receiver of plane-polarised microwave radiation selectively detecting beamed plane-polarised microwave radiation reflected from said surface in response to said incident beam on said surface,

said transmitter and receiver in their operative arrangement having their polarisation directions disposed perpendicular to each other such that the presence and absence of said flaws are indicated by, respectively, presence and absence of detection by said receiver of beamed reflected radiation plane-polarised perpendicular to said plane-polarisation of said incident beam.

4,344,031

METHOD AND DEVICE FOR VERIFYING SIGNALS, ESPECIALLY SPEECH SIGNALS

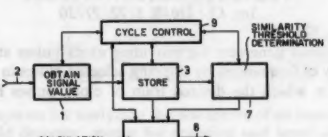
Michael Kuhn, Hamburg, and Ernst Bunge, Rheinbach, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 14, 1980, Ser. No. 149,869

Claims priority, application Fed. Rep. of Germany, May 18, 1979, 2920041

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 R 12 Claims



1. A method of verifying a finite signal pattern with various features, each subject to quantitative variability, involving the following steps;

a. in a learning phase, supplying a predetermined number of signal patterns and for each characteristic drawing up a histogram giving the number of times that the characteristic concerned had a value within a range of values of a collection of adjacent value ranges applicable to the feature;

b. in a test phase, supplying the signal pattern to be verified and detecting the value for each of said characteristics in order to indicate the value range belonging to said feature within the collection appropri .e to said feature;

c. multiplying the histogram values of the value ranges thus indicated for all said features of the signal to be verified to give an end product wherein every factor of said end product is different from zero; wherein said step further comprises:

d. in order to standarize a signal pattern supplied, multiplying the detected value of each feature by a factor $(1+e)$ where $e<<1$ to give a corrected value, and repeating this each time for all corrected values thus found until an aggregate value derived from the corrected values applying exceeds an aggregate threshold;

e. comparing said end product with a standard value in order to signal verification only if the standard value is exceeded.

4,344,032

METHOD AND ARRANGEMENT FOR TESTING THE CHARACTERISTICS OF INDUCTIVE PULSE GENERATORS

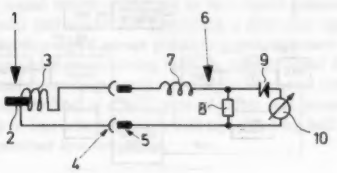
Jürgen Anlauf, Goppingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 1, 1979, Ser. No. 62,901

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1978, 2841289

Int. Cl.³ G01R *31/00, 1/38*

U.S. Cl. 324—158 MG 12 Claims



1. A device for testing the sensitivity of inductive pulse generators relative to a reference value within a low frequency range such as used to generate rpm feedback signals and the like, the device comprising inductive impedance connectable to such an inductive pulse generator and operative for deriving from the output voltage pulses produced by the inductive pulse generator an auxiliary signal whose value is proportional to the ratio of the amplitude and the frequency of the output voltage pulses produced by the inductive pulse generator; and indicator means connected to receive the auxiliary signal and operative in dependence upon the reference value for generating a quality characterization signal which is indicative of the sensitivity of the pulse generator.

4,344,033

VACUUM-ACTUATED TEST FIXTURE FOR PRINTED CIRCUIT BOARDS

Jeffrey P. Stowers, Mt. Sidney; Robert E. Stickle, Raphine, and Herbert B. Cash, Waynesboro, all of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

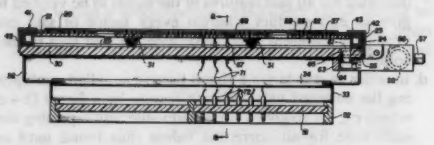
Filed Sep. 12, 1980, Ser. No. 186,462

Int. Cl.³ G01R *31/02, 15/12*

U.S. Cl. 324—158 F 14 Claims

1. A vacuum-actuated test fixture for a printed circuit board comprising a diaphragm assembly, said assembly including an elastic diaphragm body and a marginal rigid frame for said body, the diaphragm body having marginal edge portions

engaging around the top, sides and bottom of said frame and being secured thereto, a base plate supporting the diaphragm assembly and having a top face in contact with the portions of said diaphragm body engaged with the bottom of said frame, there being a vacuum chamber between the top of the base plate and the diaphragm body inwardly of said frame, means



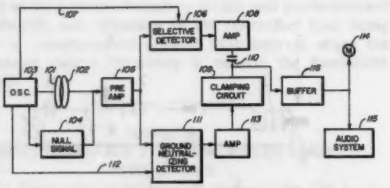
for establishing a partial vacuum within said chamber, and a diaphragm assembly capturing frame engageable over and around said assembly adjacent to said frame and serving to compress said portions of the diaphragm body engaging around the top, sides and bottom of the frame, and releasable means to secure said capturing frame in operative relationship with the diaphragm assembly.

4,344,034

SELECTIVE/GROUND NEUTRALIZING METAL DETECTOR

Byron B. Randolph, Jr., Phoenix, Ariz., assignor to Robert F. Gardiner, Phoenix, Ariz.

Filed May 5, 1980, Ser. No. 146,455
Int. Cl.³ G01V *3/11*
U.S. Cl. 324—329 **7 Claims**



1. A metal detecting system for detecting metal objects near the surface of the earth comprising:

a. an oscillator for generating an oscillator signal having a predetermined frequency;

b. transmitting means connected to said oscillator;

c. receiving means for receiving the signal transmitted by said transmitting means;

d. a first detector circuit connected to said oscillator and to said receiving means, said first detector circuit responsive to the detection of a metal object for producing at an output thereof a first detection signal having a polarity depending upon the Q of the object being detected;

e. a capacitor connected to said detector circuit to receive said first detection signal;

f. indicator means connected to said capacitor on a side thereof opposite said detector circuit;

g. a ground neutralizing detector circuit connected to said oscillator and to said receiving means, said ground neutralizing detector circuit responsive to the detection of a metal object, and adjusted to minimize the effects of ferromagnetic minerals, for producing a second detection signal;

h. a clamping circuit connected to the junction of said capacitor and said indicator means for clamping the output of said first detector circuit and preventing said first detection signal from being transmitted to said indicator means; and

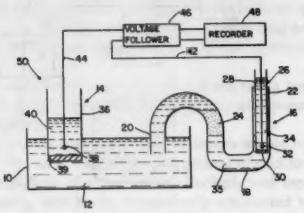
i. said clamping circuit also connected to said ground neutralizing detector and responsive to said second detection signal for unclamping the output of said first detector circuit to permit said first detection signal to be applied to said indicator means.

4,344,035

METHOD AND APPARATUS FOR DETERMINATION OF CHANGES IN THE SURFACE CHARGE OF MATERIALS

James C. Conti, East Northport; Eugene Findl, Amityville, and William Wang, Forest Hills, all of N.Y., assignors to BioResearch Inc., Farmingdale, N.Y.

Filed Nov. 10, 1980, Ser. No. 205,188
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—453 **4 Claims**



1. A method for detecting variations in the electrolytic composition of a liquid comprising

placing a conductive solid material in the liquid whereby a double layer is formed between the material and the bulk of the fluid;

placing a first passive sensor electrode in electrical communication with one side of said material and hence on one side of the double layer;

placing a second passive reference electrode in electrical communication with the bulk of the liquid on the other side of the double layer, but out of any contact with the liquid that would affect the double layer formed on said reference electrode at the same time there is an affect on the double layer formed on said solid material when the electrolytic composition of the liquid is changed;

determining the electrical potential between said electrodes at a reference time to establish a reference potential between said electrodes; and

comparing said reference potential with a later determined electrical potential and thereby obtaining the change to the transbarrier potential.

4,344,036

SKIP COUNT CLOCK GENERATOR

Housan Dakroub, Dearborn Heights, and David J. Concannon, Ypsilanti, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 24, 1980, Ser. No. 114,984
Int. Cl.³ H03K *3/72, 21/30*
U.S. Cl. 328—61 **7 Claims**

1. A clock generator for providing clock pulses at any of a plurality of frequencies by skipping selected pulses in a train of pulses, in which the desired train of clock pulses has a frequency

$$f_o = \frac{(N - M)}{N} f_1,$$

where N represents a number of pulses in a predetermined clockpulse cycle, M represents a number of pulses to be skipped, f_1 is the basic frequency of an independent oscillator and f_o is the desired frequency, comprising:

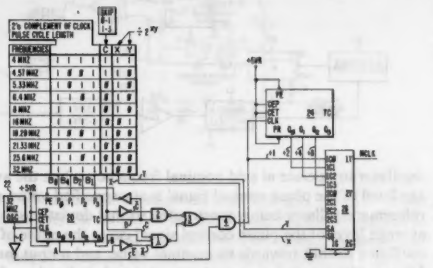
means for generating clock pulses at a basic frequency corresponding to f_1;

counting means coupled to count a number of clock pulses N

above a preset minimum value to establish a clock pulse cycle and provide an output pulse when said N pulses are counted;

means coupling said output pulse to reset said counter to said minimum value and thereby enable a count of N pulses to be repeated to establish N as the number of pulses in said clock pulse cycle;

a source of pulse place skip signals to establish the value M indicating the number of pulses to be skipped;



gating means coupled responsive to said output pulse and said pulse place skip signal to provide a logic pulse designating a pulse to be skipped; and

additional gating means coupled responsive to said logic pulse and to said clock pulses at said basic frequency f_1 to cause a pulse from among said N pulses to be skipped in order to generate a train of pulses having said desired frequency f_o.

4,344,037

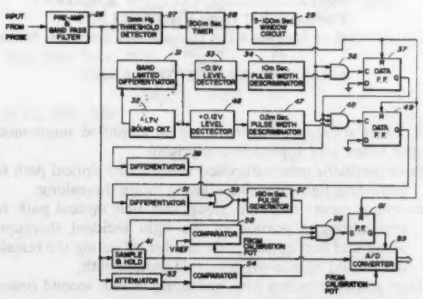
SYSTEM AND METHOD FOR ANALYZING TONOSIGNALS

Charles W. Ragsdale, Garden Grove, Calif., assignor to Cavitron Corporation, Palo Alto, Calif.

Division of Ser. No. 839,584, Oct. 5, 1977, Pat. No. 4,164,863. This application Feb. 2, 1979, Ser. No. 8,945

Int. Cl.³ H03K *5/153*; G01R *19/165*

U.S. Cl. 328—114 **7 Claims**



1. In a system for analyzing the waveform of an input signal: a threshold detector, means for coupling said input signal to said threshold detector, a timer coupled to the output of said threshold detector, a time window circuit coupled to the output of said timer, a differentiator circuit for producing an output signal corresponding in level to the magnitude of the slope of said input signal, means for coupling said input signal to said differentiator, level detector means coupled to the output of said differentiator for detecting a change of slope of said waveform beyond a predetermined value, a pulse width discriminator coupled to the output of said level detector means, and means responsive to the outputs of both said time window circuit and said pulse width discriminator for providing a utilization signal corresponding substantially to the level of said input signal at the time of said change in slope.

4,344,038

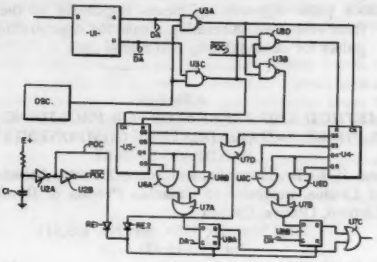
LOW FREQUENCY TONE DETECTOR

Robert D. Streeter, Fort Wayne, Ind., assignor to The Magnavox Company, New York, N.Y.

Filed May 27, 1980, Ser. No. 153,813

Int. Cl.³ H03K *5/26*

U.S. Cl. 328—138 **8 Claims**



1. Apparatus for detecting the presence in a circuit of a plurality of signals including a signal having a predetermined low frequency and a signal with half the frequency of said predetermined low frequency signal, said apparatus comprising,

signal generating means generating a signal of a known frequency; and

detection signal means connected to said signal generating means and said circuit for producing a detection signal, said detection signal means producing said detection signal in response to receiving both an output signal from said signal generating means and a signal from said circuit indicating the end of a half cycle of either said predetermined low frequency signal or said signal having half said predetermined low frequency.

4,344,039

DEMODULATING CIRCUIT FOR SELF-CLOCKING-INFORMATION

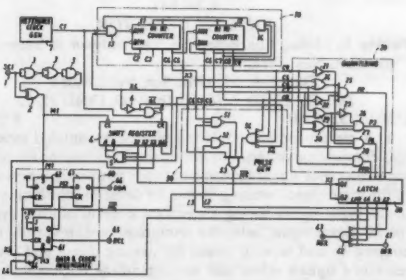
Youji Sugiura, Gifu, and Satoshi Nishimura, Kagamihara, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

Filed Mar. 5, 1980, Ser. No. 127,432

Claims priority, application Japan, Mar. 13, 1979, 54-29661; Aug. 31, 1979, 54-111920

Int. Cl.³ H03K *9/06*

U.S. Cl. 329—50 **26 Claims**



1. A circuit for demodulating a self-clocking-information

signal comprising a rectangle wave pulse train obtained by modulating a digital data signal of the logics one and zero such that the signal reversion periods become two or more predetermined different lengths, comprising:

period determining means for determining which one of said two or more different length periods by measuring each said signal reversion period of said rectangle wave pulse train,

pulse generating means responsive to the output of said period determining means for generating pulses which correspond to and uniquely identify said two or more predetermined different length periods, and

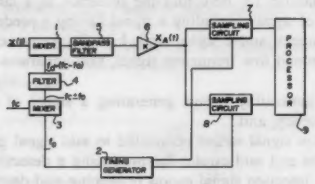
clock pulse regenerating means responsive to the pulses from said pulse generating means for regenerating clock pulses for demodulating said digital data.

4,344,040

METHOD AND APPARATUS FOR PROVIDING THE IN-PHASE AND QUADRATURE COMPONENTS OF A BANDPASS SIGNAL

James P. Reilly, Hamilton, and Simon Haykin, Ancaster, both of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Mar. 26, 1980, Ser. No. 133,911
Int. Cl.³ H03D *3/18*
U.S. Cl. 329—50 **15 Claims**



1. A method of determining the in-phase (I) and quadrature (Q) components of a bandpass signal x(t) having a center frequency f_c and a bandwidth 2 w comprising:

(a) heterodyning the signal x(t) from its center frequency f_c to an intermediate frequency f_o;

(b) dividing the heterodyned signal into first and second substantially identical signals;

(c) sampling the first divided signal at an instant during successive periods T_s where $T_s = m/f_o$ and m is an integer, to provide an output which represents the I component;

(d) sampling the second divided signal during the successive periods T_s wherein the sampling instants are shifted by $b/4f_o$ with respect to the sampling instant of the first divided signal, where b is an odd integer, to provide an output which represents the Q component; and

(e) making a time shift correction of $b/4f_o$ to the output representing the Q component when f_o21 20 w.

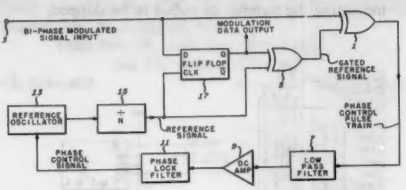
4,344,041

BIPHASE DETECTOR

Reuben E. Maine, Charlottesville, Va., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 27, 1981, Ser. No. 239,084
Int. Cl.³ H03D *3/18;* H03K *9/00;* H04L *27/22*
U.S. Cl. 329—50 **8 Claims**

1. A circuit for demodulating biphase modulated input signals comprising voltage controlled oscillator means for providing a reference signal having a nominal frequency equal to that of the input signal, sensing means for detecting the binary level of the input signal during a specified interval of each cycle of the reference signal, selective reference signal inverting means coupled to said sensing means for passing direct and inverted reference signals when said sensing means responds to input signals having high and low binary levels, respectively, gating means connected to receive said input signals and the signals from said inverting means, said gating means being constructed to provide a unipolar pulse train having a high level only when one but not both of the signals applied to the gating means is at a high level, filter means to apply a phase control signal representative of the average level of said pulse train to said voltage controlled oscillator, said filter means being adjusted to provide a phase control signal having a value that causes the



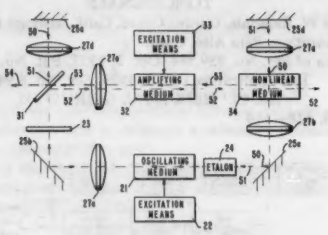
oscillator to operate at said nominal frequency when the average level of the phase control signal is at a specified value, said reference oscillator being constructed so that deviations in the average level of the phase control signal cause the phase of the oscillator to shift towards its nominal value, and output means for providing modulation data output signals indicative of the response of said sensing means.

4,344,042

SELF-REGENERATIVE LASER OSCILLATOR-AMPLIFIER

David T. Hon, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 3, 1980, Ser. No. 126,592
Int. Cl.³ H01S *3/098*
U.S. Cl. 330—4.3 **5 Claims**



1. Laser apparatus for providing an amplified single-mode output beam, said apparatus comprising:

laser oscillator means disposed along a first optical path for providing light of a single lasing mode therealong;

coupling means disposed along said first optical path for transmitting a portion of the light incident thereupon along said first optical path, and for reflecting the remainder of said light along a second optical path;

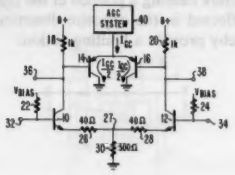
laser amplifier means disposed along in said second optical path for amplifying light of said single lasing mode made incident thereupon; and

nonlinear medium means, disposed in said first and second optical paths so as to intercept light provided by said laser amplifier means and said laser oscillator means, for providing phase conjugate light in response to the light intercepted thereby in a four-wave mixing manner, said phase conjugate light being transmitted along said second optical path through said laser amplifier means to said coupling means which transmits a portion of the light incident thereupon to provide an amplified single-mode output beam of said apparatus, and reflects the remainder of the light along said first optical path.

4,344,043
VARIABLE LOAD IMPEDANCE GAIN-CONTROLLED AMPLIFIER

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,032
Int. Cl.³ H03F 3/45
U.S. Cl. 330—254 **16 Claims**

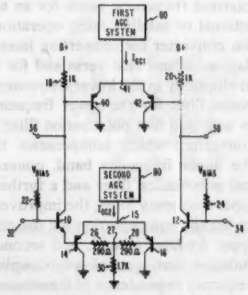


1. A gain-controlled amplifier comprising:
an amplifying transistor having a base electrode coupled to an input terminal, a collector electrode coupled to an output terminal, and an emitter electrode;
means, coupled to said base, collector and emitter electrodes, for applying bias voltages to said electrodes;
a source of gain controlling current; and
means, having a first electrode coupled to said collector electrode, a second electrode coupled to a point of reference potential, and a third electrode coupled to said source of gain controlling current, and having a main current-conducting path between said second and third electrodes, the current conducted by said first electrode being substantially less than the current of said main current-conducting path when said main path is conductive, and responsive to said gain controlling current for developing a gain controlling resistance between said first and third electrodes which is a function of the magnitude of said gain controlling current and is applied to said collector electrode by said first electrode.

4,344,044
GAIN-CONTROLLED AMPLIFIER UTILIZING VARIABLE EMITTER DEGENERATION AND COLLECTOR LOAD IMPEDANCE

Jack R. Harford, Flemington, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 23, 1980, Ser. No. 143,034
Int. Cl.³ H03F 3/45
U.S. Cl. 330—254 **14 Claims**

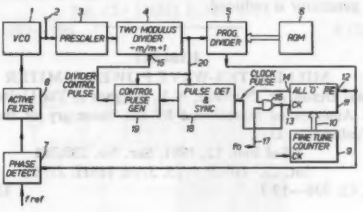


1. A gain-controlled amplifier comprising:
an amplifier transistor having a base electrode coupled to receive input signals, a collector electrode at which output signals are derived, and an emitter electrode;
means, coupled to said base, collector, and emitter electrodes for biasing said transistor;
a first source of control current;
a second source of control current;
a first controlled impedance device, having first and second electrodes connected by a main DC current path and a third electrode through which a significantly lesser DC current flows when said main DC current path is conductive, said first source of control current being coupled to said first electrode and said third electrode being coupled to said collector electrode of said amplifying transistor and presenting a gain controlling impedance thereat which is a function of the magnitude of the control current supplied by said first source; and
a second controlled impedance device, having fourth and fifth electrodes connected by a main DC current path and a sixth electrode through which a significantly lesser DC current flows when said main DC current path of said second device is conductive, said second source of control current being coupled to said fourth electrode and said sixth electrode being coupled to said emitter electrode of said amplifying transistor and presenting a gain controlling impedance thereat which is a function of the magnitude of the control supplied by said second source.

4,344,045
PHASE LOCKED LOOP FREQUENCY SYNTHESIZER WITH FINE TUNING

Tapan K. Das, and Martin A. Fryer, both of Swindon, England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Oct. 24, 1979, Ser. No. 87,723
Claims priority, application United Kingdom, Nov. 2, 1978, 43000/78
Int. Cl.³ H03L 7/18
U.S. Cl. 331—1 A **12 Claims**

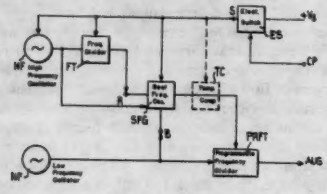


1. A frequency synthesiser arrangement, comprising:
a controlled oscillator providing oscillation signals;
divider means for dividing said oscillation signals provided by the oscillator to produce divider output signals, said divider means including a two modulus divider providing two modulus divider output signals comprising a waveform having positive and negative going edges;
comparator means for comparing said divider output signals from the divider means with a reference signal so as to provide a control signal for controlling the controlled oscillator;
fine tuning means for providing a fine tuning control signal comprising at least one clock pulse; and
pulse generator means responsive to the fine tuning control signal from the fine tuning means for providing a control pulse in response to each said at least one clock pulse and for synchronizing each said control pulse with one of said positive going edge or said negative going edge, whereby to control the two modulus divider to divide by one of two factors for a first period dependent upon the number of control pulses provided by the pulse generator means, and to control the two modulus divider to divide by the other of the two factors for a second period of time.

4,344,046
SIGNAL GENERATOR INCLUDING HIGH AND LOW FREQUENCY OSCILLATORS

Alphonse E. Zumsteg, Solothurn, Switzerland, assignor to Societe Suisse pour L'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed Feb. 29, 1980, Ser. No. 126,154
Claims priority, application Switzerland, Mar. 9, 1979, 2267/79
Int. Cl.³ H03B *5/04, 5/32*
U.S. Cl. 331—158 **5 Claims**

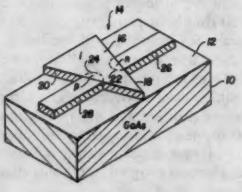


1. A signal generator having reduced current consumption, comprising:
- a high frequency crystal oscillator;
- a low frequency crystal oscillator;
- means connected to said high and said low frequency oscillators for producing a frequency correction signal;
- a programmable frequency divider connected to said low frequency oscillator and controlled by said frequency correction signal for dividing the frequency of said low frequency oscillator to produce an output signal of the signal generator; and
- an electronic switch connected to said high frequency oscillator to periodically switch said high frequency oscillator on and off, whereby current consumption in the signal generator is reduced.

4,344,047
MILLIMETER-WAVE POWER LIMITER

Samuel Dixon, Jr., Neptune, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 12, 1981, Ser. No. 233,751
Int. Cl.³ H01P *1/15, 3/16;* H01L *27/06*
U.S. Cl. 333—17 L **13 Claims**

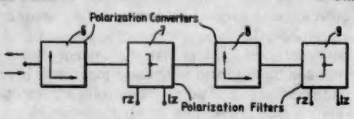


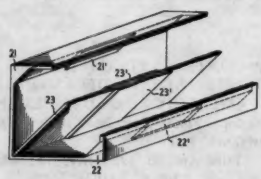
1. An RF power limiter for millimeter and sub millimeter waves, comprising:
- an image transmission line structure capable of propagating millimeter and sub-millimeter waves;
- a semiconductor PIN diode formed on one outer surface of said image transmission line structure, said image transmission line structure also being the substrate for said PIN diode;
- said PIN diode having a planar configuration consisting of a generally flat wedge-shaped region of intrinsic semiconductor material having adjoining edges including mutually opposing regions of oppositely doped semiconductor material separated by an intervening region of intrinsic material of said wedge-shaped region; and
- circuit means coupled to said intrinsic region and said oppositely doped regions for the application of operating potentials which cause a predetermined non-avalanche current to flow but achieving avalanche breakdown upon the propagation of a predetermined level of millimeter and sub-millimeter wave power along said image transmission line structure causing a portion of the propagating energy to be reflected in the opposite direction to propagation and thereby provide a limiting action.

4,344,048
FOUR-PORT NETWORK FOR SEPARATING TWO SIGNALS COMPRISED OF DOUBLY POLARIZED FREQUENCY BANDS

Günter Morz, Ludwigsburg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.h., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 11, 1980, Ser. No. 177,449
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1979, 2932626; Aug. 11, 1979, 7923001[U]
Int. Cl.³ H01P *1/161, 1/213*
U.S. Cl. 333—135 **5 Claims**





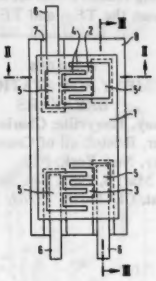
1. In a four-port network for separating signals comprised of two doubly polarized frequency bands for an antenna feeder system in directional or satellite radio operation, including a first polarization converter for converting linear polarization to circular polarization and vice versa and for providing the lowest inherent ellipticity in the lower frequency band, a symmetric polarization filter for the lower frequency band connected in series with said first polarization filter, and a second polarization converter, which compensates the remaining ellipticity in the upper frequency band, connected between said symmetrical polarization filter and a further polarization filter for the upper frequency band; the improvement wherein in order to provide the compensation for the remaining ellipticity in the upper frequency band, said second polarization converter includes: a first type of wavecoupling means for reducing the frequency dependence of the remaining ellipticity while simultaneously increasing the amount of the remaining ellipticity; and a second different type of wavecoupling means for producing the resultant effect that the amount of the remaining ellipticity and additionally its frequency dependence are reduced to a minimum.

4,344,049

SURFACE WAVE COMPONENT

Friedrich Grobe, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 27, 1980, Ser. No. 181,825
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938542
Int. Cl.³ H03H *9/145, 9/25, 9/64, 9/42*
U.S. Cl. 333—154 16 Claims



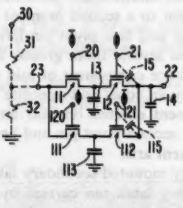
1. A surface wave component comprising:
a base plate;
a substrate including a first surface, and a second surface carried on and attached to said base plate;
a first transducer and a second transducer carried spaced apart on said first surface, each of said transducers including an interdigital structure comprising a pair of rear portions and internested fingers extending therefrom; and
first and second coupling means for coupling a signal into or out of said component, each of said coupling means located adjacent a respective transducer and each of said coupling means comprising an electrical lead carried on said second surface opposite a respective rear portion and capacitively coupled to the respective rear portion via said substrate, to provide a pair of coupling capacitances.

4,344,050

DUAL CHANNEL DIGITALLY SWITCHED CAPACITOR FILTER

Kent R. Callahan, Lynwood, Wash., assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Sep. 22, 1980, Ser. No. 189,709
Int. Cl.³ H03H *19/00;* H03K *4/00*
U.S. Cl. 333—173 5 Claims



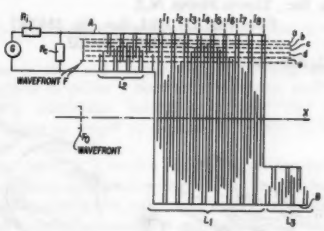
1. A dual channel digitally switched capacitor filter comprising:
an input terminal for receiving a reference voltage;
an output terminal;
an output storage capacitor connected between said output terminal and ground; and
a first and a second switched capacitor resistor equivalent connected in parallel, each having an input lead and an output lead, wherein said switched capacitor resistor equivalent input leads are connected to said input terminal and said switched capacitor resistor equivalent output leads are connected to said output terminal, wherein each said switched capacitor resistor equivalent comprises:
a first switch means connected between said input terminal and a first plate of an intermediate storage capacitor having two plates, said other plate of said intermediate storage capacitor being connected to ground; and
a second switch means connected between said first plate of said intermediate storage capacitor and said output terminal, and
wherein said first switch means of said first switched capacitor resistor equivalent and said second switch means of said second switched capacitor resistor equivalent are controlled by a first of two non-overlapping clock pulses and said second switch means of said first switched capacitor resistor equivalent and said first switch means of said second switched capacitor resistor equivalent are controlled by a second of two nonoverlapping clock pulses.

4,344,051

ELASTIC SURFACE WAVE TRANSDUCER AND FILTER INCORPORATING SUCH A TRANSDUCER

Gerard Coussot, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 24, 1980, Ser. No. 115,095
Claims priority, application France, Jan. 26, 1979, 79 02100
Int. Cl.³ H03H *9/145, 9/64*
U.S. Cl. 333—194 4 Claims



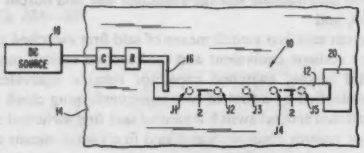
1. An elastic surface wave transducer with a pulse response having at least one major lobe and one minor lobe positioned upstream of the major lobe, said transducer having two interdigitated transducer elements with fingers of unequal length in such a way as to form a succession of radiating intervals transmitted by surface waves in a direction X according to a design reproducing the envelope of the said pulse response, each finger being formed by two parallel metal strips spaced by $\lambda/4$, λ being the wavelength corresponding to the central frequency of the transmission spectrum of the transducer, whereby the zone of interdigitated transducer elements which synthesize the minor lobe and the zone of the interdigitated transducer elements which synthesize the major lobe are displaced perpendicular to the transmission direction in such a way that the waves transmitted by the minor lobe essentially encounter fingers belonging to the same transducer element in the region of the major lobe.

4,344,052

DISTRIBUTED ARRAY OF JOSEPHSON DEVICES WITH COHERENCE

Arthur Davidson, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,603
Int. Cl.³ H01P *7/08;* H01L *39/22*
U.S. Cl. 333—222 **29 Claims**



1. A distributed array of Josephson devices, said array exhibiting coherence effects, comprising:

a plurality of devices exhibiting Josephson currents therethrough and capable of having a zero voltage state and a non-zero voltage state, said devices being electrically connected in series along a waveguide type structure, each said device being coupled to all of the other Josephson devices by an electromagnetic wave,

a waveguide type structure connecting said devices in series, said waveguide structure being capable of controllably supporting and sustaining electromagnetic waves along its entire length, said waves being coupled to each of said devices,

a source of current through said devices in said series array for biasing said devices, and

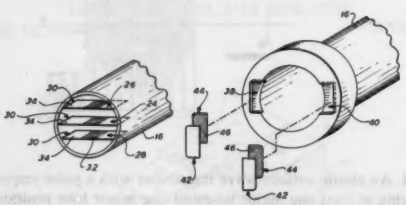
means for producing said electromagnetic wave along the entire length of said waveguide type structure.

4,344,053

MODE SUPPRESSOR FOR CIRCULAR WAVEGUIDES UTILIZING A PLURALITY OF RESISTANCE CARDS

Tore N. Anderson, Brookfield, Conn., assignor to Litton Systems, Inc., Morris Plains, N.J.

Filed Feb. 12, 1981, Ser. No. 234,067
Int. Cl.³ H01P *1/162*
U.S. Cl. 333—251 **7 Claims**



1. A mode suppressor for use in combination with a circular waveguide having a circular sidewall and a longitudinal axis for suppressing unwanted modes of a microwave signal having an electric field perpendicular to the longitudinal axis of said circular waveguide, said mode suppressor comprising:

a first resistance means lying in a plane including the longitudinal axis of said circular waveguide with the plane of said resistance means being substantially perpendicular to the electric field of the TE_{11} mode of said microwave signal, said resistance means having an electrically conducting resistive film for suppressing the TM mode but not the TE_{11} mode of microwave signals;

a pair of second resistance means lying in respective planes above and below the plane of said first resistance means and generally parallel to the plane of said first resistance means, each of said second resistance means having an electrically conducting resistive film on the central portions thereof for suppressing the TE_{on} modes of microwave signals where n is an integer of 1 or more;

a pair of secondary waveguides electrically coupled to said circular waveguide, said secondary waveguides having slots contained in planes perpendicular to the longitudinal axis of said circular waveguide; and

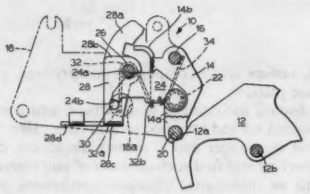
third resistance means contained in each of said secondary waveguides, said third resistance means having an electrically conducting resistive film for suppressing microwave signals in at least the TE_{21} and TE_{31} modes.

4,344,054

LATCH ASSEMBLY FOR STATIC TRIP CIRCUIT BREAKERS

Roger N. Castonguay, Terryville; Charles L. Jencks, Avon, and Peter P. Clickner, Bristol, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Mar. 4, 1981, Ser. No. 240,442
Int. Cl.³ H01H *73/02, 75/02*
U.S. Cl. 335—169 **4 Claims**



1. A trip latch assembly for releasably latching the pivotally mounted cradle of an automatic electric circuit breaker in a reset position against the bias of operating mechanism springs, said latch assembly comprising, in combination:

A. a primary latch lever pivotally mounted adjacent one of its ends by a first pivot pin and mounting adjacent its other end a primary latch pin for engaging a primary latch shoulder formed on the cradle to sustain the cradle in its reset position, the cradle exerting a first moment on said primary latch lever about said first pivot pin, said first moment having a relatively short first moment arm;

B. an intermediate latch lever pivotally mounted adjacent its one end by a second pivot pin carried by said primary latch lever, said intermediate latch lever including an intermediate latch shoulder and a secondary latch shoulder separately formed at its other end;

C. an intermediate latch pin fixedly positioned for engagement by said intermediate latch shoulder to translate said first moment to a second moment on said primary latch lever about said first pivot pin having a second moment arm at least several times greater than said first moment arm, the force component of said second moment being opposed by an equal and opposite force component of a third moment exerted on said intermediate latch lever about said second pivot pin and having a relatively short third moment arm;

D. a pivotally mounted secondary latch lever; and

E. a secondary latch pin carried by said secondary latch lever in position to engage said secondary latch shoulder to translate said third moment to a fourth moment on said intermediate latch lever about said second pivot pin having a fourth moment arm at least several times longer than said third moment arm, whereby an exceptionally light trip force exerted on said secondary latch is effective in swinging said secondary latch pin out of engagement with said secondary latch shoulder to then permit said intermediate latch shoulder to disengage said intermediate latch

pin and, in turn, said primary latch pin to swing out of engagement with the cradle primary latch shoulder.

4,344,055

AUTOMATIC TRIP DEVICE FOR CIRCUIT INTERRUPTER

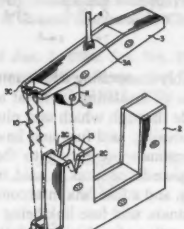
Haruhisa Toda, and Yoshiaki Matsumoto, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1980, Ser. No. 143,206

Claims priority, application Japan, Apr. 24, 1979, 54-57272[U]

Int. Cl.³ H01H *9/20*

U.S. Cl. 335—174 **6 Claims**



1. Circuit breaker automatic trip apparatus of the type adapted to enclose a current carrying conductor and operatively connect to a releasable circuit breaker switching mechanism, comprising:

a stationary core of magnetic material disposed about an associated current-carrying conductor, said stationary core comprising a pair of recessed bearing surfaces and means defining a recess between said bearing surfaces;

a movable core of magnetic material comprising a projecting member, rotatable support means, and means adapted for connection to an associated circuit breaker switching mechanism, said rotatable support means being supported by said recessed bearing surfaces and rotatably positioning said movable core such that said projecting member cooperates with said recess to complete a magnetic circuit with said stationary core, said movable core being rotatable between first and second positions, rotation to said second position being operable to actuate an associated circuit breaker switching mechanism; and

means biasing said moveable core toward said first position.

4,344,056

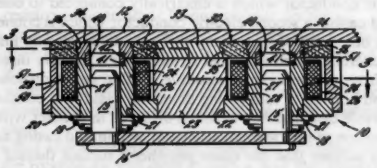
ELECTROMAGNET WITH REPLACEABLE FRICTION FACE

Edward R. Kroeger, and Philip E. Myers, both of Beloit, Wis., assignors to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Jul. 31, 1980, Ser. No. 174,213

Int. Cl.³ H01F *7/06*

U.S. Cl. 335—219 **12 Claims**



6. An electromagnet for use with a brake or the like, said electromagnet comprising a plate made of low reluctance magnetic material, three spaced openings formed in said plate, three studs made of low reluctance magnetic material and fixed within said openings, said studs extending outwardly from and being disposed substantially perpendicular to said plate and having outer ends which are disposed in a common plane, two of said studs being outboard studs and being located on opposite sides of the third stud, and annular coils telescoped over said outboard studs and each having means adapted for connection to a voltage source, the improvement in said electromagnet comprising, a sheet of friction material having parallel inner and outer faces and having holes coaxial with said studs and extending between said faces, inserts made of low reluctance magnetic material fixed within said holes and having ends which are substantially flush with the faces of said friction material, the inner ends of said inserts being disposed in end-to-end engagement with the outer ends of said studs, and means restricting said friction material from shifting edgewise relative to said studs.

4,344,057

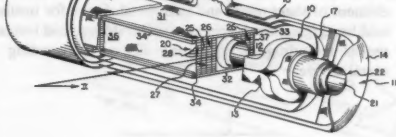
TRANSVERSE MAGNETIC LOAD CONTAINMENT STRUCTURE FOR USE IN MHD MAGNETS

Zdenek J. J. Stekly, Wayland, and Robert D. Pillsbury, Jr., Natick, both of Mass., assignors to Magnetic Corporation of America, Waltham, Mass.

Filed Jan. 28, 1980, Ser. No. 115,935

Int. Cl.³ H01F *5/00*

U.S. Cl. 335—299 **19 Claims**



1. An integral magnetic load containment structure comprising

a. a pair of first and second magnet winding assemblies positioned to define a bore there between, each of said winding assemblies including at least one channel throughout its length to engagingly receive at least one magnet conductor,

b. at least one pair of tension members spanning bore space and operably connected to the first and second assemblies of the respective pair to receive transverse forces transmitted from each pair of first and second assemblies to the respective tension member; and

c. a first backing means connected to the first magnet winding assemblies of said pair and a second backing means connected to the second magnet winding assemblies of said pair, each of said backing means being adapted to take shear forces transmitted from said winding assemblies.

4,344,058

LOW VOLTAGE CARTRIDGE FUSE DESIGN

Edward J. Knapp, Jr., Salisbury, and Richard J. Perreault, Amesbury, both of Mass., assignors to Gould, Inc., Rolling Meadows, Ill.

Filed Sep. 2, 1980, Ser. No. 183,493

Int. Cl.³ H01H *71/20*

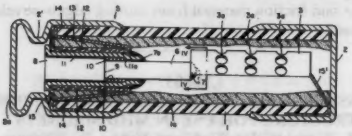
U.S. Cl. 337—148 **13 Claims**

1. An electric fuse comprising a casing of electric insulating material closed on both ends thereof by a pair of terminal caps; separate means for interrupting major fault currents and for

interrupting overload currents arranged in said casing and serially connected to each other; said means for interrupting major fault currents including a fusible element of sheet metal having serially arranged points of reduced cross-section; said means for interrupting overload currents including a spring-biased contact inserted into the circuit by one or more solder joints; and a pulverulent arc-quenching filler inside said casing wherein the improvement comprises

(a) a contact in the form of a plunger soldered by a first solder joint to one of the ends of said fusible element and acted upon by a helical spring tending to break said first solder joint;

(b) a tubular metal sleeve surrounding said plunger with a clearance between said metal sleeve and said plunger;



(c) a second solder joint precluding entry of said arc-quenching filler into said metal sleeve by why of said clearance between said metal sleeve and said plunger;

(d) a heating element of sheet metal extending along the outer surface of said metal sleeve for heating said metal sleeve and said plunger, said heating element having current-carrying tab means interposed between the outer surface of said casing and one of said pair of terminal caps; and

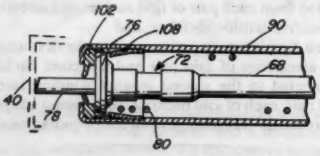
(e) electric insulating means interposed between said heating element of sheet metal and said metal sleeve for insulating said heating element from said metal sleeve, said insulating means including an insulating sleeve surrounding said metal sleeve.

4,344,059

ARCING ROD CATCHER FOR HIGH VOLTAGE FUSE

Roy T. Swanson, North Riverside, Ill., assignor to S&C Electric Company, Chicago, Ill.

Filed Nov. 11, 1976, Ser. No. 741,027
Int. Cl.³ H01H *71/20*
U.S. Cl. 337—174 **3 Claims**



1. In a high voltage fuse of the type having an arcing rod moveable within the fuse under the urging of a spring to one end of the fuse when a fusible element melts so that an end of the arcing rod engages a fuse release assembly to cause the fuse to disengage a fuse mounting, an improvement comprising:

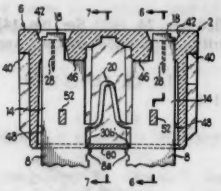
means for engaging the arcing rod only after it moves to the end of the fuse to prevent the arcing rod from moving back away from the end of the fuse, wherein the arcing rod includes a flange arranged to first pass, then be engaged by said finger.

4,344,060

ENCLOSED PLUG-IN FUSE ASSEMBLY

Allen L. Ciesemier, Palatine; Robert J. Tait, Arlington Heights, and Leonard A. Smith, Streamwood, all of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Sep. 19, 1980, Ser. No. 188,870
Int. Cl.³ H01H *85/16*
U.S. Cl. 337—260 **5 Claims**



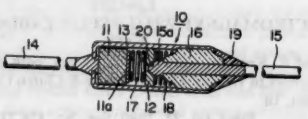
1. In a fuse assembly comprising a fuse unit and a housing for said fuse unit made of insulating material and having an initially fully open side through which said plug-in fuse unit was inserted into said housing, said fuse unit having a pair of confronting spaced terminals projecting to the exterior of said housing through spaced openings in said initially fully open side of said housing, and a fuse link interconnecting extensions of said pair of terminals, said fuse link being positioned to pass through the entry portion of said initially fully open side of said housing as the fuse link entered said housing, the improvement wherein said fuse link entry portion of said initially fully open side of said housing is closed between said spaced openings by a closure flap extending from said housing and folded, after at least partial insertion of said fuse unit into said housing, into a position closing said portion of said initially fully open side of said housing, said folded closure flap and the relationship between said terminals of the fuse unit and the housing openings preventing the passage of pieces of blown fuse link to the exterior of the housing, and means for holding said closure flap in the folded condition comprising a shoulder on at least one of the said plug-in fuse unit terminals.

4,344,061

TEMPERATURE-SENSITIVE FUSE

Yoshio Niwa, Kawasaki, Japan, assignor to Showa Electric Wire & Cable Co., Ltd., Kanagawa, Japan

Filed Sep. 5, 1980, Ser. No. 184,357
Claims priority, application Japan, Sep. 11, 1979, 54-116594
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—407 **4 Claims**



1. A temperature-sensitive fuse comprising a cylindrical, tubular, electrically and thermally conductive casing; a first electric conductor which is electrically connected to one end of said casing; a second electric conductor which is connected to the other end of said casing through an electrically insulating material in such a manner so as to be electrically insulated therefrom; a temperature-sensitive, fusible pellet disposed in the end portion of said casing containing said first conductor; a movable disc member which is disposed in contact with the top portion of said second conductor within said casing and in such a manner that the outer peripheral surface thereof is in slidable contact with the inner wall of said casing; a hold-spring which normally urges said movable disc so as to bring said movable disc into pressure contact with the top portion of

said second conductor; and a pressure-spring for moving said movable disc in the direction away from the top portion of said second conductor when said fusible pellet melts and collapses; the top portion of said second conductor, which is in contact with a central portion of said movable disc, being rounded or formed in the shape of a circular cone, and in the central portion of said disc, a tapered, pierced opening being formed in the axial direction of said tubular casing, into which the top portion of said second conductor can be substantially, fitted, and in one portion of said disc a slit open from said tapered opening to an outer peripheral portion of said disc being formed.

4,344,062

HUMIDITY SENSOR ELEMENT

Giichi Sudoh, Chichibu; Keiichi Minegishi, Kumagaya; Tokuji Akiba, Kumagaya; Tadao Kato, Kumagaya, and Norio Ogawa, Kumagaya, all of Japan, assignors to Chichibu Cement Co., Ltd., Japan

Filed Jun. 3, 1980, Ser. No. 156,192
Claims priority, application Japan, Jun. 7, 1979, 54-70608
Int. Cl.³ H01L *7/00*
U.S. Cl. 338—35 **2 Claims**

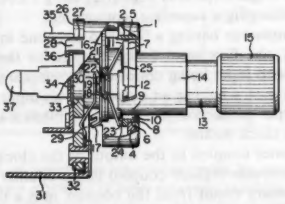
1. A humidity sensor element comprising a metal oxide semiconductor sintered member composed of a composition of TiO_2 as a principal material and containing 0.1 to 10 mole % of V_2O_5, said member being provided with electrodes.

4,344,063

CLICK SETTING VARIABLE RESISTOR

Tadashi Nishimoto, Yawata, and Shunzo Oka, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Jan. 14, 1981, Ser. No. 225,124
Claims priority, application Japan, Jan. 25, 1980, 55-8061[U]
Int. Cl.³ H01C *10/30*
U.S. Cl. 338—160 **5 Claims**



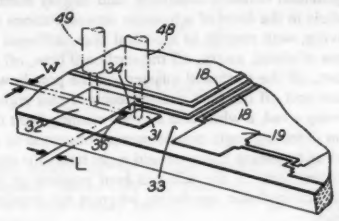
1. A click setting variable resistor of the type comprising:
a cover;
a base plate mounted on said cover so as to close the open end thereof, said cover and base plate cooperating to form a housing;
a resistor and a contactor mounted on said base plate, said resistor and contactor having arcuate portions;
an operating shaft substantially perpendicular to said base-plate and rotatably extended through a wall of said housing;
a wiper arm mounting member interposed between the closed end of said cover and said base plate adjacent said shaft;
a wiper arm mounted on said wiper arm mounting member for rotation by said shaft in such a way that finger means extending from said wiper arm electrically bridges between the arcuate portions of said resistor and said contactor;
a click disk or plate fitted into said cover and provided with a click slot; and
a click spring mounted on said wiper arm mounting member and provided with a projection adapted to engage with said click slot of said click disk, whereby when said projection of said click spring drops into said click slot of said click disk, said operating shaft is click set;
said click disk being rotatably fitted into said cover in such a way that the torque required for rotating said click disk relative to said cover is greater than a first torque for releasing said projection of said click spring out of said click slot of said click disk when said operating shaft is in a first position, but is lower than a second torque required for releasing said projection of said click spring out of said click slot of said click disk when said operating shaft is in a second position;
all of said torques being produced when said operating shaft is rotated; and
said operating shaft being shifted axialiy between said first and second positions.

4,344,064

ARTICLE CARRYING A DISTINCTIVE MARK

Joel R. Bitler, Allentown; Michael W. Bodnar, Macungie; Raymond H. Booth, Walnutport; Daniel J. Roman, Bethlehem; Fred J. Schneider, Northampton; Philip W. Seitzer, Bethlehem, and George F. Wilkinson, Jr., Northampton, all of Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Dec. 6, 1979, Ser. No. 101,042
Int. Cl.³ H01C *13/00*
U.S. Cl. 338—334 **5 Claims**

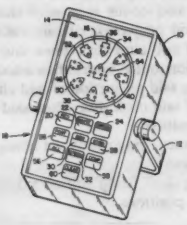


1. An electronic article, which comprises:
a substrate;
circuit elements supported by the substrate, said circuit elements including conductive leads connecting said elements into a circuit component capable of performing a circuit function with characteristic values within ranges of values, and first type terminals coupled to selected ones of such conductive leads and located in predetermined, spaced locations on said substrate, said first type terminals being adapted to connect said electronic article into a selected electric circuit; and
at least one resistive element supported by said substrate, said at least one resistive element having one of two characteristic resistance value states separated by a predetermined threshold value, the value of said at least one resistive element indicating said circuit elements as having a functional output in a certain, predetermined range of values of at least two predetermined ranges of values, said at least one resistive element being coupled between two terminals supported by the substrate, at least one of said two terminals being a second type terminal which is not adapted to become coupled into said selected electric circuit, whereby the range of values of said functional output is embodied in the value of said at least one resistive element and is ascertainable by electrical measurement of said at least one resistive element without coupling said circuit elements into an electric measuring circuit for ascertaining said value of said at least one resistive element.

4,344,065
CONVERGENCE INDICATOR FOR MARINE AND FLIGHT VEHICLES

Dennis C. Erwin, 6715 Riverside, Powell, Ohio 43065; Joseph A. Bowman, and Joseph P. Marsalka, both of Columbus, Ohio, assignors to Dennis C. Erwin, Powell, Ohio

Filed Jul. 21, 1980, Ser. No. 170,939
Int. Cl.³ G08G *3/02*; G06G *7/78*
U.S. Cl. 340—29 **1 Claim**



1. An improved apparatus for signalling to an operator of a first vehicle the existence of a potential collision condition with respect to a second vehicle having navigation lights, said apparatus having: a plurality of input switches each associated with indicia indicating a relative position of said second vehicle with respect to said first vehicle said position indicia comprising ahead, astern, starboard and port or equivalent indicia; a plurality of input switches each associated with indicia indicating a navigation light color; visual display means for signalling a potential collision condition, said display means comprising indicia in the form of schematic representations of eight boats having, with respect to a central boat, different relative positions of ahead, astern, off the starboard bow, off the starboard beam, off the starboard quarter, off the port bow, off the port beam and off the port quarter, each of said eight boat indicia having a red, a white and a green running light thereon; collision detecting logic circuit means connected to said switches and said running lights on said eight boats for energizing each selected light of the selected boat position in response to a potential collision condition; wherein the improvement comprises:

(a) parallel boat forming indicia as a part of said display means in the form of schematic representations of at least a portion of a boat on each side of and parallel to said central boat, the parallel boat on the port side of said central boat having green and white running lights and the parallel boat on the starboard side having red and white running lights; and

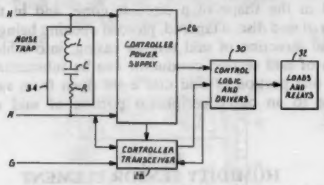
(b) a parallel boat logic circuit means having inputs connected to said collision detecting logic circuit means and outputs connected to the running lights of said parallel boats for actuating the lights of the parallel boat on the starboard side of said central boat in response to actuation of the starboard, stern, red, white and no other switches and in response to actuation of the starboard, red, white and no other switches and for actuating the lights of the parallel boat on the port side of said central boat in response to actuation of the port, green, white and no other switches and in response to actuation of the port, stern, green, white and no other switches.

4,344,066
NOISE TRAP ARRANGEMENT FOR AC POWER LINE COMMUNICATION SYSTEMS

James H. Beggs, Clark County, Nev., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 27, 1980, Ser. No. 201,159
Int. Cl.³ H04M *11/04*
U.S. Cl. 340—310 A **10 Claims**

1. In a communication system operable to transmit encoded room status information and other data on neutral and ground lines included in an AC power line which also includes a hot line and which extends between separate areas in a building

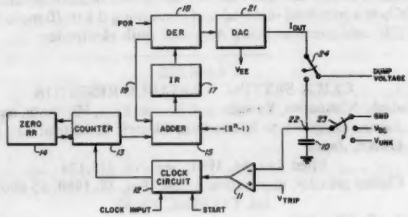


complex such as the rooms of a hotel, motel, or hospital, the improvement comprising noise trap means connected between the hot and neutral lines of the AC power line for attenuating noise on the hot and neutral lines.

4,344,067
ANALOG TO DIGITAL CONVERTER AND METHOD OF CALIBRATING SAME

Robert D. Lee, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 21, 1979, Ser. No. 96,276
Int. Cl.³ H03K *13/20*
U.S. Cl. 340—347 CC **11 Claims**



11. A single slope a/D converter using a DAC for controllably discharging a capacitor, comprising:

a comparator having a first and a second input and an output, the first input being coupled to the capacitor, the second input being coupled to a reference level;

clock means having an output and an input coupled to the output of the comparator which inhibits the output from the clock means;

a counter coupled to the output of the clock means;

a conversion register coupled to the counter for converting a binary count from the counter into a converter count and coupling the converted count to the counter; and

means for controlling the DAC using counts in the counter and coupling the counter to the DAC.

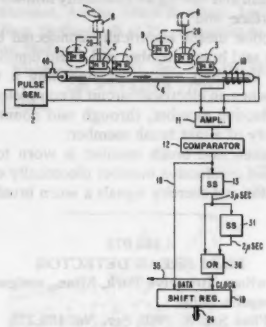
4,344,068
CODING SCHEMES FOR ACOUSTIC DELAY LINE DATA COLLECTION SYSTEM

David A. Thompson, South Salem, and Thomas K. Worthington, Tarrytown, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 29, 1979, Ser. No. 43,610
Int. Cl.³ G06F *3/02*
U.S. Cl. 340—365 L **10 Claims**

5. In a magnetoacoustic sensor delay line system including a delay line, the improvement comprising provision of at least a pair of position magnets at each data position with a first of said magnets in a fixed position and a second data magnet thereof movable with respect to said delay line, whereby said first fixed magnet provides a synchronization signal and each of

said data magnets can, as a function of key actuation, provide a data signal adjacent to said synchronization signal, wherein a plurality of said second movable data magnets are associated with each data position, and a key is associated with each of said data positions, and said data magnets for each of said data



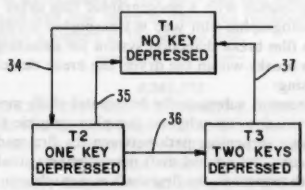
positions are differentially movable by mechanical interconnection with a said key, a pickup coil coupled with said delay line of said delay line system and means for receiving a plurality of said data signals for each synchronization signal, said means for receiving being coupled to the output of said pickup coil.

4,344,069

METHOD AND APPARATUS FOR CHARACTER GENERATION

Eric S. Prame, Lidingo, Sweden, assignor to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 19, 1979, Ser. No. 95,897
Claims priority, application Sweden, Nov. 21, 1978, 78119831
Int. Cl.³ G08C 9/00; B41J 5/06
U.S. Cl. 340—365 S **6 Claims**



1. A method of generating character codes by means of a keyboard having a plurality of keys arranged spatially in rows and columns, an electronic scanning means for scanning said keys to detect actuations thereof, and to produce key identification codes for said actuated keys, each of said keys bearing a plurality of potential symbols to be generated by depression of that key, said symbols being arranged in a spatial array on the face of said key, said keyboard also having an encoding means for generating character codes in response to the detection of actuated key codes produced by said scanning means, said method comprising steps of:

selecting a first key for depression from among the spatial array of said keys on said keyboard, said selection being in accordance with the relative spatial position in said array that said first key bears to the other keys on said keyboard, which relative spatial position corresponds to the relative position of the desired character symbol in its said spatial array of possible character symbols on the face of a second said key in said array;

depressing said first key and generating a key code therefor as the result of said scanning;

depressing said second key and generating a key code therefor in response to said scanning, said second key being the one on which said desired character symbol appears in the relative spatial relationship to other possible character codes on the face of said key, said relative spatial position corresponding to the relative spatial position of said first depressed key in said array of keys on said keyboard, said first key being maintained in a depressed state contemporaneously with the depression of said second key;

detecting the coincidence of contemporaneous depression of said first and second keys; and

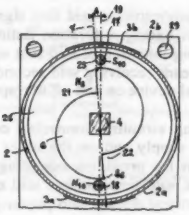
encoding a character code corresponding to the desired said character selected by the combined said codes produced by the depressions of said first and second keys.

4,344,070

PERMANENT MAGNET FOR A BISTABLE ELEMENT AND BISTABLE ELEMENT AND DATA DISPLAY UNITS WITH AT LEAST ONE SUCH ELEMENT

Jean-Pierre Forest, Chemin Ste. Barbe, 59126 Linselles, and Jean Y. Rabette, 4 Allee du cloitre, 59910 Bondues, both of France

Filed Jun. 26, 1980, Ser. No. 163,402
Int. Cl.³ G08B 5/14
U.S. Cl. 340—815.08 **7 Claims**



1. Permanent magnet (6) for bistable element (1+8) activated by magnetic means (10) and constituting one of the components of a data display unit (2+30+31); said element (1+8) comprising:

a rotor, (1) a body (2) for said rotor on the outside of which are delimited two opposite surfaces (2a+2b) which bear different indications (3a+3b) from each other;

a permanent magnet (6) rotating with the body (2) of the rotor (1) and to which it is attached in a position such that a line (7) passing through North and South poles of the permanent magnet is radial to an axis of rotation (4) of the rotor (1);

a stator (8) having a support (9);

an electromagnet (10) attached to said support (9) in such a position that its North and South poles are simultaneously and substantially symmetrically arranged with respect to the axis of rotation (4) of the rotor (1) and in a plane in which the poles of the permanent magnet (6) revolve around the axis (4) of the rotor;

means for connecting the electromagnet (10) to a direct current source for short-term feeds with reversible polarity;

said permanent magnet (6) comprising:

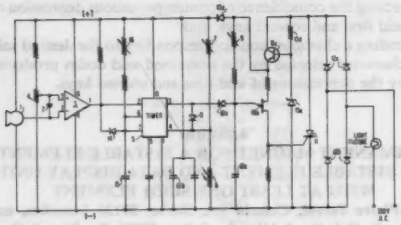
when seen in profile, polar zones having abruptly cut away contours such that they delimit, in each of said zones, very precisely on one side and the other of the line (7) passing through the poles of the permanent magnet, fractions of polar areas whose respective distances from the axis (4) of rotation of the permanent magnet (6) are different; and

diametrically opposed to the axis (4) one of the fractions of each of the polar zones, because of the contouring, is closest to the axis (4) and the other of the fractions is farthest away.

4,344,071
LIGHT SWITCHING MECHANISM

Glenn R. Allen, Thornhill, Canada, assignor to Roger A. Heller, Houston, Tex.

Filed Jul. 10, 1980, Ser. No. 168,234
Int. Cl.³ G08B 13/22
U.S. Cl. 340—566 16 Claims



1. A switch apparatus for automatically turning an electrical device on and off in response to a sensed condition comprising:

receiver means for sensing a particular condition and for providing a first signal in response to said particular condition; -

timer means responsive to said first signal for providing a second signal having a duration lasting a predetermined time following initiation of said first signal;

main switch means receiving said second signal for turning said electrical device on and off in response to said second signal; and

power-providing circuitry connected on one hand to an A.C. power supply and on the other hand to said main switch means for providing operating power to said receiver means, said timer means, said main switch means, and said electrical device; said power-providing circuitry comprising:

bridge means for rectifying the voltage from said A.C. power supply to provide a rectified voltage;

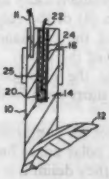
capacitive means for storing a charge from said rectified voltage; and

first switch means for applying a portion of said rectified voltage to said capacitive means, whereby said receiver means and said timer means are powered by said capacitive means.

4,344,072
WORN BRUSH INDICATOR

Harold L. Harper, Jr., 4517 Dennis Way, Las Vegas, Nev. 89121

Filed Dec. 10, 1979, Ser. No. 101,887
Int. Cl.³ G08B 21/00
U.S. Cl. 340—648 2 Claims



1. A worn brush indicator for an electrical machine having a rotating commutator, at least one brush holder, and a carbon brush member in said brush holder, each brush member having a conductive body and face end for effecting a sliding and conductive contact with said commutator comprising:

a cavity in said brush member extending through said brush member from an end region opposite to said face end of said brush member and toward said face end for a selected distance;

an insulating sleeve in said cavity;

a conductive member extending through said insulating sleeve to a point which is a selected distance from the face of said brush and having an essentially non-abrasive terminating surface; and

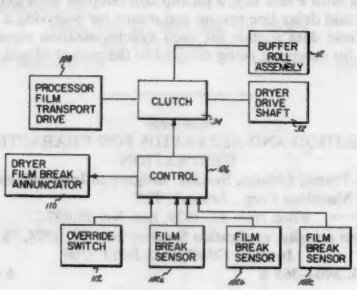
signal detection means electrically connected between the body of a said brush member and a said conductive member, and including means for signalling a worn brush member when an electrical circuit is completed between a said conductive member, through said commutator, and to the body of a said brush member;

whereby, when said brush member is worn to a selected degree, said conductive member electrically engages said commutator and thereby signals a worn brush condition.

4,344,073
FILM BREAK DETECTOR

Robert M. Rawlings, Brooklyn Park, Minn., assignor to Padco, Inc., Minneapolis, Minn.

Filed Sep. 8, 1980, Ser. No. 185,275
Int. Cl.³ G08B 21/00
U.S. Cl. 340—675 10 Claims



1. In combination with a photographic film dryer through which a photographic film web is transported under tension and dried, a film break detection system for detecting photographic film breaks within the dryer, the break detection system comprising:

first and second substantially horizontal shaft means in a spaced relationship wherein the photographic film web traverses a serpentine path between the first and second shaft means, the second shaft means being spatially movable with respect to the first shaft means wherein the first shaft means includes a plurality of first shafts all approximately at the same vertical position and wherein the second shaft means includes a plurality of second shafts all at approximately the same vertical position, each second shaft being located below a corresponding first shaft;

roller means on the first and second shaft means movably engaging the photographic film web as the web traverses the serpentine path between the first and second shaft means;

biasing means for applying a bias force to each second shaft in a direction opposite to a force applied to the second shaft by the film tension, thereby suspending the second shaft with respect to the corresponding first shaft; and

means for sensing a change of spatial position of the second shaft as a result of a film break and providing an alarm signal indicating that the film break occurred in the dryer, the means for sensing a change of spatial position being positioned within the dryer and wherein the means for sensing includes a plurality of switch means and each second shaft being positioned with a corresponding switch means such that when the film break has occurred, an individual second shaft physically engages the corre-

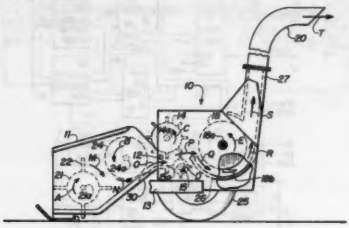
sponding switch means to indicate that the film break occurred in the dryer.

4,344,074

MAGNETIC FIELD PRODUCING APPARATUS

Richard P. Strosser, Akron; Mark K. Chow, Leola, and Carl E. Bohman, New Holland, all of Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Apr. 2, 1981, Ser. No. 250,510
Int. Cl.³ G08B 21/00
U.S. Cl. 340—684 **3 Claims**



1. In a metal detector suitable for protecting rotatable machine elements in harvesting machines comprising means for generating a magnetic field in a material flow path, at least one sensing coil in which an electrical signal is induced when the magnetic field is altered by the presence of metallic material, and a signal processor to initiate a control sequence to limit damage to the elements when the presence of undesirable metal is detected, the improvement comprising:

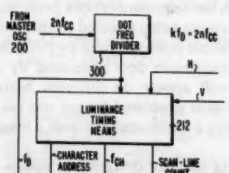
means for producing a pattern of magnetic fields in the material flow path, portions of said fields being other than parallel to each other, said means being a magnet configuration having a plurality of magnet members, one of said magnet members being in a first row, others of said magnet members being in a second row, said rows being traverse to the material flow path and said magnet members of said first row being in staggered relationship with the magnet members of the second row.

4,344,075

TIMING CIRCUIT FOR THE DIGITAL GENERATION OF COMPOSITE LUMINANCE AND CHROMINANCE VIDEO SIGNAL FOR NON-INTERLACED TELEVISION RASTER SCAN-LINE PATTERN

John E. Rudy, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1980, Ser. No. 181,984
Int. Cl.³ G09G 1/28
U.S. Cl. 340—703 **11 Claims**



1. In a system incorporating generating means for digitally generating a composite video signal defining luminance and chrominance information that is to be displayed in color on a color display device that at a field frequency exhibits successive fields of a given non-interlaced television raster scan-line pattern, wherein each field is composed of a predetermined even whole number of scan lines of which an ordinal subset of certain consecutive scan lines of each field comprises a display portion of that field and a subset comprising the remainder of the scan lines of each field constitutes a non-display portion of that field, and wherein said composite video signal includes a specified color-carrier frequency that is substantially equal in value to one-half a certain odd harmonic of that scan-line frequency which exists during the entire display portion of that field, the improvement wherein said generating means comprises:

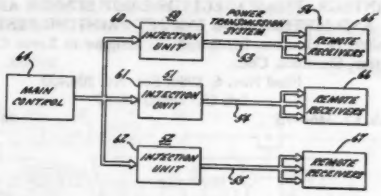
timing control means operative only during a selected single scan line of the non-display portion of each field for altering the beginning of the display portion of the next successive field by an amount substantially equal to a given odd number of half-cycles of said specified color-carrier frequency.

4,344,076

FEEDBACK SENSOR FOR REMOTE RECEIVER IN A POWER TRANSMISSION SYSTEM

Terence O. Lewis, Roswell, Ga., assignor to Sangamo-Weston, Inc., Atlanta, Ga.

Filed Jun. 29, 1979, Ser. No. 53,252
Int. Cl.³ H04Q 9/00
U.S. Cl. 340—825.17 **2 Claims**



1. In a power transmission system of the type in which pulse coded messages are injected onto the power lines for signaling control functions, said system having a plurality of receivers connected to the power lines, each receiver being coded to respond to particular ones of the pulses in the messages, said receivers including means for detecting the pulses for which they are coded and for actuating mechanical means in response thereto, an improved signal injection monitor comprising a receiver coded to respond to substantially all of the pulses in the messages, an optical coupler mounted on the receiver and a shutter mounted on the receiver, one of said elements being mounted on the mechanical means so as to define a first position wherein the shutter interrupts the optical coupler and a second position where the optical coupler is not interrupted, said first and second positions being defined by the actuated and unactuated conditions of the mechanical means, and means monitoring the optical coupler to detect the response of the receiver to pulses as they are injected onto the power lines.

4,344,077

ADAPTIVE SPATIAL MICROWAVE FILTER

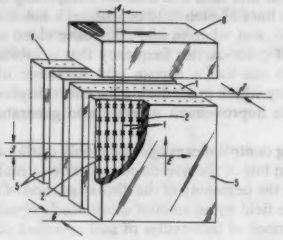
Claude Chekroun, Bures sur Yvette; Yves C. Michel, Massy, and Henri Sadones, Paris, all of France, assignors to Societe d'Etude du Radant, Orsay, France

Filed Jan. 31, 1980, Ser. No. 117,243
Claims priority, application France, Feb. 5, 1979, 79 02918
Int. Cl.³ H01Q 17/00
U.S. Cl. 343—754 **12 Claims**

1. A process of adaptive coherent side lobe cancellation of a radiation pattern of a microwave antenna emitting linearly polarized microwaves without beam shifting said pattern comprising the steps of:

placing as a filter, in front of said antenna, a network of conductors, said conductors being loaded with variable

resistances whose values vary according to the intensity of current in said conductors, and



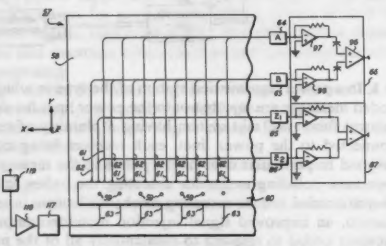
modulating the intensity of said currents in said conductors to vary the values of said resistances and thereby attenuate selected side lobes of said radiation pattern.

4,344,078

INTEGRATED WAVEGUIDE DROP SENSOR ARRAY AND METHOD FOR INK JET PRINTING SYSTEM

Robert D. Houston, Marion, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 6, 1980, Ser. No. 204,433
Int. Cl.³ G01D *18/00*
U.S. Cl. 346—75 **24 Claims**



22. In an ink jet printer of the type wherein multiple ink nozzles spaced across a droplet generator direct multiple droplet streams toward a print medium, apparatus for sensing the movement of said droplet streams past sensing sites spaced across a printing width comprising

multiple cooperating light carrying fiber pairs (A,B) spaced across said width with the number of pairs equal to the number of sensing sites, each fiber having an input end facing a sensing site and extending away from the site to an output location, the two fibers comprising each pair having their centers spaced along the direction of droplet travel to facilitate routing of said fiber pairs away from the sensing site without intersecting, and further having their centers spaced along a direction orthogonal to said path of travel,

means for transmitting a light signal through said sensing sites to the input ends of the fiber pairs spaced across said width, and

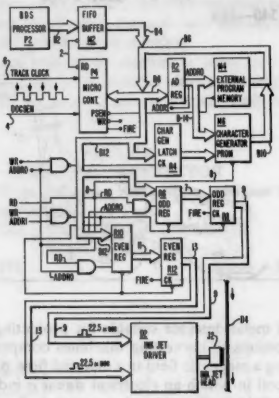
means for determining the position of droplets passing through said sensing site including means for converting light intensities transmitted by each cooperating fiber pair to electrical signals, means for storing said electrical signals and means for comparing said stored signals.

4,344,079

SYSTEM FOR MATRIX PRINTING

John M. Chambors, Canton, and Harry L. Wallace, Livonia, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1980, Ser. No. 145,780
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **2 Claims**



1. A system for controlling the generation of printed characters by a drop-on-demand ink jet printer, in which an array of ink jet nozzles is employed to eject drops of ink selectively on demand and form patterns on objects moving past the nozzles, the system employing control signals from outside the system to determine what characters are to be printed, when they are to be printed and where they are to be printed, the system comprising:

an ink jet head supporting a plurality of ink jet nozzles arrayed in two columns, designated even and odd columns, said ink jet nozzles in the even column being positioned so that horizontal lines through each of them will be oriented parallel to horizontal lines through the jet nozzles in the odd column;

said ink jet head supporting said columns of ink jet nozzles in a position perpendicular to said horizontal lines;

means for receiving signals designating a character to be printed and routing those signals via intermediate means to a memory device;

said memory device responding to the signals to provide dot designating signals establishing how each of the dots is to be placed to make up a designated character in accordance with the requirements of a preferred character font;

said dot placement being selected to ensure the generation of dots in adjacent print positions by different ink jet nozzles, whereby successive dots generated by any two ink jet elements will appear on different horizontal lines and successive dots generated by any one ink jet element will appear along a horizontal line with a blank space between dots;

means routing said dot designating signals to first registers for storage; and

means routing said dot designating signals to second registers for storage;

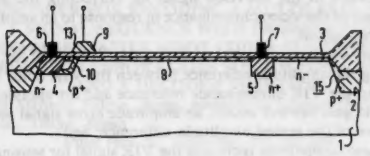
said second registers responding to the receipt of fire signals indicating the precise time to form each dot by providing fire pulses to drive ink jet driver means and eject a drop of ink.

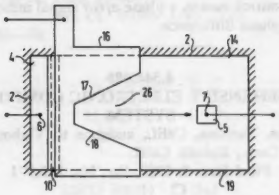
4,344,080

FIELD EFFECT TRANSISTOR

Jenö Tihanyi, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,605
Claims priority, application Fed. Rep. of Germany, Dec. 5, 1978, 2852621
Int. Cl.³ H01L 29/72
U.S. Cl. 357—23 9 Claims





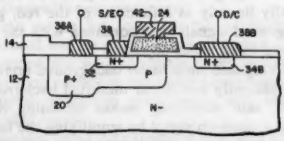
1. Field effect transistor having a semiconductor substrate with a predominant region of a first conduction type, a source and a drain of a conduction type opposite the first conduction type, a zone of the opposite conduction type disposed between the source and the drain and surrounded by another region of the first conduction type and doped more heavily than the predominant region of the substrate and a control electrode insulated from the surface of the semiconductor substrate comprising a drift section for charge carriers forming part of the zone disposed between the source and the drain and located between the control electrode and the drain, said drift section having a substantially constant doping and widening from the control electrode towards the drain to a width which is a plurality of times greater than the width thereof at the control electrode.

4,344,081

COMBINED DMOS AND A VERTICAL BIPOLAR TRANSISTOR DEVICE AND FABRICATION METHOD THEREFOR

Henry C. Pao; Richard A. Blanchard, both of Los Altos, and Benedict C. K. Choy, Campbell, all of Calif., assignors to Supertex, Inc., Sunnyvale, Calif.

Filed Apr. 14, 1980, Ser. No. 139,793
Int. Cl.³ H01L 27/02
U.S. Cl. 357—43 4 Claims



1. A combined MOS-bipolar semiconductor device comprising, in combination,

a semiconductor body having at least one major surface including a surface portion of one conductivity type;

first and second spaced regions of opposite conductivity type formed in said body and abutting said major surface, third and fourth regions of said one conductivity type formed in said first and second regions, respectively, abutting said major surface and defining at least one channel region and at least one bipolar transistor;

an insulating layer on said major surface;

gate electrode means formed on said insulating layer over said channel region for forming an MOS transistor,

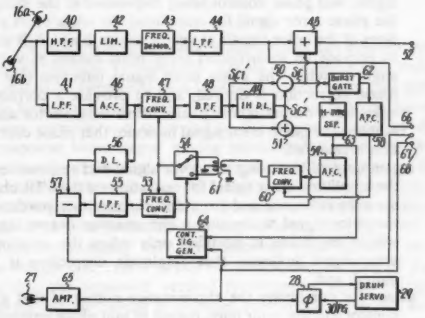
separate electrical contact means to said first region, said third region, and said gate electrode means for permitting separate turn-on of said MOS transistor and said bipolar transistor.

4,344,082

APPARATUS FOR RECOVERING A FREQUENCY-CONVERTED CHROMINANCE COMPONENT THAT IS SUBSTANTIALLY FREE OF CROSS-TALK COMPONENTS

Makoto Ishiodori, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 14, 1980, Ser. No. 168,026
Claims priority, application Japan, Jul. 17, 1979, 54-90616
Int. Cl.³ H04N 5/78
U.S. Cl. 358—8 19 Claims

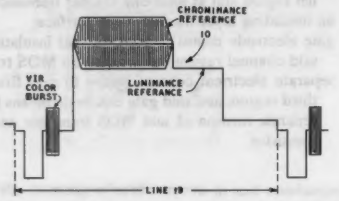


1. Apparatus for recovering a frequency-converted chrominance component, substantially free of cross-talk components, from a composite video signal reproduced from successive record tracks on a record medium, the composite video signal in adjacent tracks having frequency-converted chrominance components whose chrominance carriers exhibit a frequency interleaved relationship with respect to each other, said apparatus comprising reproducing means for reproducing at least the frequency-converted chrominance component from respective tracks, together with an accompanying cross-talk component picked up from an adjacent track; cross-talk separating means, including comb filter means, coupled to said reproducing means for separating the cross-talk component from the reproduced frequency-converted chrominance component; combining means for combining said separated cross-talk component and said reproduced frequency-converted chrominance component to produce a frequency-converted chrominance component substantially free of cross-talk components; and an output terminal coupled to said combining means for receiving the cross-talk free frequency-converted chrominance component and for supplying said cross-talk free frequency-converted chrominance component to further means.

4,344,083
VIR GAIN AND PHASE CORRECTION NETWORK

Gopal K. Srivastava, Buffalo Grove, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Dec. 22, 1980, Ser. No. 219,104
Int. Cl.³ H04N 9/535
U.S. Cl. 358—21 V 6 Claims



1. In a VIR correction system which processes a color signal composed of standard color bursts, video chrominance, a VIR color burst and a VIR chrominance reference to develop a phase error signal and an amplitude error signal, a phase and amplitude correction network for utilizing the error signals to selectively modify the color signal, comprising:

a phase shifting network receiving the color signal at a vector angle A for providing a phase shifted color signal at a vector angle B;

a phase control having a first input port receiving the color signal at vector angle A, having a second input port receiving the phase shifted color signal at vector angle B, and having a third input port receiving the phase error signal, said phase control being responsive to the state of the phase error signal for combining the color burst portions of the color signals at vector angles B and A-B so as to provide an uncorrected color burst output at vector angle A when the phase error signal indicates that no phase correction is desired, and to provide a corrected color burst output whose phase differs from vector angle A when the phase error signal indicates that phase correction is required;

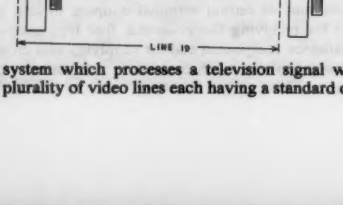
a gain control receiving the color signal and responsive to the amplitude error signal for operating on the VIR chrominance reference and the video chrominance portion of the color signal to develop a chrominance output signal whose amplitude is modified only when the amplitude error signal indicates that amplitude correction is required; and

means for combining the chrominance output of said gain control and the color burst output of said phase control to provide a composite corrected color signal.

4,344,084
VIR CORRECTION SYSTEM

Christopher M. Engel, Arlington Heights; Gopal K. Srivastava, Buffalo Grove, and George J. Tzakis, Glenview, all of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 4, 1981, Ser. No. 231,635
Int. Cl.³ H04N 9/535
U.S. Cl. 358—21 V 13 Claims



1. In a system which processes a television signal which includes a plurality of video lines each having a standard color burst and video chrominance, and at least one line carrying a VIR signal composed of a VIR color burst and a VIR chrominance reference, a VIR correction system for automatically controlling the phase of the standard color burst and the amplitude of the video chrominance, comprising:

phase control means receiving at least the standard color burst portion of the television signal for correcting the phase of the standard color burst in response to a phase error signal;

gain control means receiving at least the video chrominance portion of the televison signal for correcting the amplitude of the video chrominance in response to an amplitude error signal;

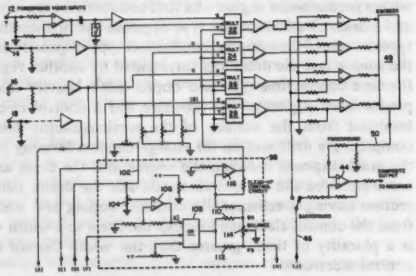
an amplitude comparator receiving the VIR signal for sensing the amplitude reference between the VIR color burst and the VIR chrominance reference and for applying, to said gain control means, an amplitude error signal indicative of the sensed amplitude difference; and

a phase comparator receiving the VIR signal for sensing the phase difference between the VIR color burst and the VIR chrominance reference and for applying, to said phase control means, a phase error signal indicative of the sensed phase difference.

4,344,085
COMPREHENSIVE ELECTRONIC COMPOSITING SYSTEM

Petro Vlahos, Tarzana, Calif., assignor to Vlahos-Gottschalk Research Corp., Reseda, Calif.

Filed Dec. 4, 1980, Ser. No. 212,971
Int. Cl.³ H04N 9/535
U.S. Cl. 358—22 33 Claims



1. An improved comprehensive electronic system for compositing foreground and background signals of the so-called "blue-screen type" wherein the foreground signals are formed against a uniform color background comprising:

a source of red, green, and blue foreground signals;

a source of background signals;

means for developing a basic varying background control signal for varying the intensity of the background signal, including intermediate levels of background signals for use in the case of transparent foreground objects and the edges of rapidly moving foreground objects, including means for varying said basic background control signal substantially linearly as a function of the red, green and blue foreground signals in accordance with the transparency of said foreground objects;

means modifying said basic linear background control signal into a significantly non-linear modified background control signal; said modifying means including means for producing a clean-up signal by amplifying the basic background control signal and raising it to full intensity in areas approaching and close to full transparency, and concurrently reducing the intensity of the foreground signals in these areas, whereby semi-transparent objects

are made fully transparent at such levels, and dust, footprints and the like on the uniform color background of the foreground scene are eliminated;

means for controlling the intensity of the background picture elements in accordance with said modified background control signal; and

means for combining the resultant foreground and background signals to produce high quality composite images.

4,344,086

ENCODER FOR ENCODING A MULTILEVEL PEL SIGNAL SEQUENCE WITH PROBABILITY REPRESENTATIVE MODE CODES ALLOTTED TO PREDICTION ERROR CODES FOR EACH PEL SIGNAL AND A DECODER THEREFOR

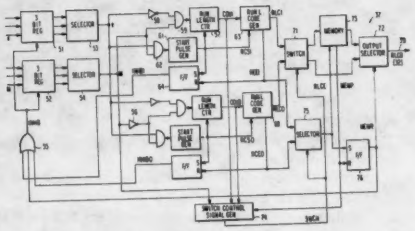
Shoji Mizuno, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1980, Ser. No. 207,500

Claims priority, application Japan, Nov. 20, 1979, 54-150349; Apr. 4, 1980, 55-44306; Apr. 4, 1980, 55-44307; Apr. 9, 1980, 55-46673; Apr. 9, 1980, 55-46674

Int. Cl.³ H04N *1/40, 7/12*

U.S. Cl. 358—78 **14 Claims**



1. A multilevel picture element signal encoder-decoder system comprising an encoder and a decoder;

said encoder being for encoding a sequence of original picture element signals into a compression encoded signal, each picture element signal x being capable of taking each of a plurality of levels, more than two in number, with a first probability dependent on an original reference signal S consisting of those of the picture element signals in said sequence which precede said each picture element signal x in a predetermined relationship with respect to said each picture element signal x, said levels being assigned with serial numbers, respectively, according to the respective first probabilities, said encoder comprising:

prediction error code producing means responsive to said reference signal S and said each picture element signal x for producing a predetermined number of prediction error codes which are so dependent on the serial number assigned to the level actually taken by said each picture element signal x as to represent a prediction error;

mode code producing means responsive to said reference signal S and said prediction error codes for producing a plurality of mode codes allotted to the respective prediction error codes, each mode code being representative of a second probability that the prediction error code allotted therewith represents zero;

grouping means for grouping the prediction error codes produced for the picture element signals in said sequence in accordance with the mode codes allotted thereto; and

compression encoding means for compression encoding the grouped prediction error codes into said compression encoded signal;

said decoder being for expansion decoding said compression encoded signal into a sequence of reproduced picture element signals by reproducing the mode codes for each reproduced picture element signal in response to a reproduced reference signal consisting of those of the reproduced picture element signals in said reproduced picture element signal sequence, which precede said each reproduced picture element signal in said predetermined relationship with respect to said each reproduced picture element signal, and in response to those reproductions of the prediction error codes into which said compression encoded signal is expansion decoded as regards said each reproduced picture element signal with reference to the reproduced mode codes.

4,344,087

METHOD OF PROCESSING VIDEO SIGNALS FOR TIME BASE CORRECTION

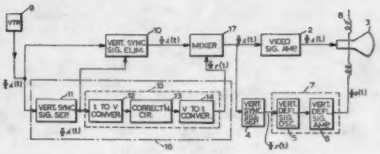
Masao Tomita, Neyagawa; Takenobu Isaka, Moriguchi; Kiyoji Fujisawa, Nara, and Mineo Mino, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Nov. 27, 1979, Ser. No. 98,199

Claims priority, application Japan, Dec. 1, 1978, 53-149331

Int. Cl.³ H04N *5/76, 5/795*

U.S. Cl. 358—127 **6 Claims**



1. A method of processing video signals, comprising: processing vertical synchronous signals in a composite video signal to be monitored by a television receiver, the time periods between adjacent ones of said vertical synchronous signals being variable; and supplying to the television receiver the composite video signal having substituted therein the thus processed vertical synchronous signals, said processing of the vertical synchronous signals being performed by a vertical synchronous signal processing apparatus comprising: a separation circuit for performing the step of separating the vertical synchronous signals from the composite video signal; a time-to-voltage conversion circuit for performing the step of converting the separated vertical synchronous signals to converted signals having amplitudes corresponding to the time periods between the vertical synchronous signals; a correction circuit for performing the step of correcting amplitudes and phases of the converted signals in accordance with the frequencies of the converted signals; and a voltage-to-time conversion circuit for performing the step of converting the information corresponding to the thus corrected amplitudes to time information; the composite video supplied to the television receiver formed by mixing a composite video signal without any vertical synchronous signals with the processed vertical synchronous signals.

4,344,088

VARIABLE-VELOCITY FILM EXPOSING AND DEVELOPING APPARATUS

Stephen L. Corsover, Philadelphia, Pa.; Lawrence W. Dobbins, Woodlynne, and Paul B. Pierson, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 19, 1980, Ser. No. 179,424

Int. Cl.³ H04N *5/86*

U.S. Cl. 358—132 **11 Claims**

1. The combination of,

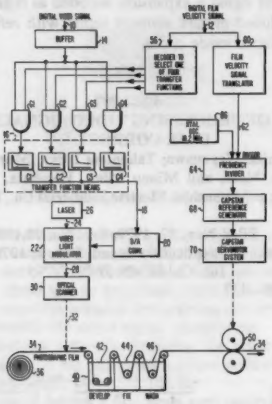
a photographic film exposing apparatus including a radiation source for exposing the film,

variable transfer function means to translate received video

density signals to corresponding exposure signals to control said radiation source,

a photographic film developing apparatus,

variable-velocity film transport means to transport said film at the same velocity through both said exposing apparatus and said developing apparatus,



means responsive to a received film velocity signal to control said variable-velocity film transport means, whereby the time period each element of the film is in the developer varies inversely with film velocity, and

means responsive to said received film velocity signal to modify said variable transfer function means to provide exposure signals appropriate for the time period each element of the film is in the developer.

4,344,089

GHOST CANCELLING SYSTEM

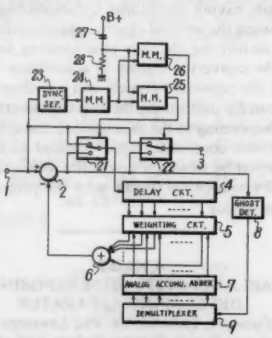
Kimitake Utsunomiya, Sagamihara; Hisafumi Yamada, Tohshin, and Choei Kuriki, Urawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 5, 1981, Ser. No. 222,687

Claims priority, application Japan, Jan. 12, 1980, 55/2296

Int. Cl.³ H04N *5/21*

U.S. Cl. 358—167 **8 Claims**



1. A ghost cancelling system comprising:

an input terminal applied with a video signal including a ghost signal component;

a ghost cancelling circuit connected to said input terminal;

an output terminal connected to said ghost cancelling circuit for deriving an output video signal in which said ghost signal component is substantially suppressed; and

switching means included in said ghost cancelling circuit for making said ghost cancelling circuit operable between a feed-forward type circuit and a feedback type circuit.

4,344,090

TELEVISION SET WITH PICTURE-STORAGE MEANS

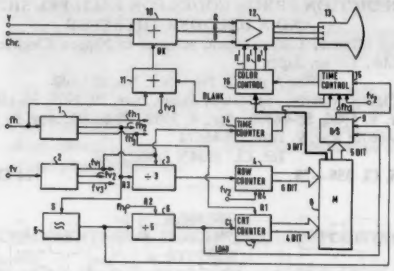
Pietro Belisomi, Pinerolo, and Attilio Farina, Turin, both of Italy, assignors to Indesit Industria Elettrodomestici Italiana S.p.A., Italy

Filed Sep. 13, 1979, Ser. No. 75,274

Claims priority, application Italy, Sep. 25, 1978, 69195 A/78

Int. Cl.³ H04N *5/44, 9/535*

U.S. Cl. 358—183 **10 Claims**



1. A television set, comprising:

picture display means for displaying an image responsive to a signal applied thereto;

first means for receiving a broadcast television signal and generating a first electrical signal representative thereof;

non-volatile memory means for storing coded data representative of at least one predetermined image which is independent of said broadcast television signal for display on said display means;

second means for reading data stored in said memory and for generating a second electrical signal representative thereof;

switching means for selectively applying at least one of said first and second electrical signals to said display means so as to operate said television set in either a first mode of operation, in which only an image represented by said broadcast television signal received by said first means is displayed on said display means, and a second mode of operation, in which only an image represented by data stored in said non-volatile memory is displayed on said display means;

said switching means including a manual three position switch movable between first, second and third positions, said switch means operating said television set in said first mode of operation when said three position switch is in said first position, said switch means operating said television set in said second mode of operation when said three position switch is in a second position, and said switching means alternately operating said television set in said first and said second modes of operation according to a predetermined time pattern, when said three position switch is in said third position.

4,344,091

RANDOM ACCESS MEMORY IMAGING SYSTEM

Harry N. Gardner, and John P. Petty, both of Colorado Springs, Colo., assignors to NCR Corporation, Dayton, Ohio

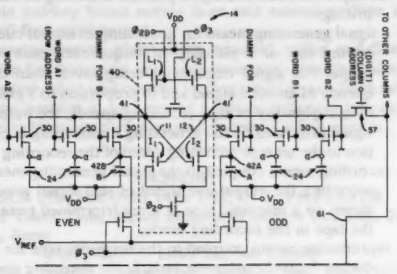
Filed May 17, 1979, Ser. No. 40,009

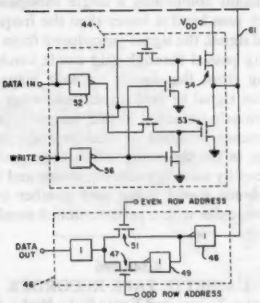
Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **7 Claims**

1. In a solid state imaging system of the type including means for sensing incident radiation and responsively supplying elec-

trical signals controlled by the incident radiation, and means for utilizing the controlled electrical signals, the improvement wherein the sensing means is a random access memory for





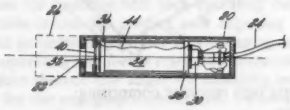
providing digital electrical signals controlled by a threshold value of incident radiation and comprising a digital data pattern of the incident radiation.

4,344,092

MINIATURE VIDEO CAMERA MEANS FOR VIDEO SYSTEM

Frederick A. Miller, Santa Barbara, Calif., assignor to Circon Corporation, Santa Barbara, Calif.

Filed Oct. 21, 1980, Ser. No. 199,380
Int. Cl.³ H04N *5/26, 5/34*
U.S. Cl. 358—217 **11 Claims**



1. A video camera means for use in a video system comprising

a video imaging means having an imaging surface for receiving an optical image thereon and for generating a video signal representing a said optical image;

a housing having an optical device coupling end enclosing and supporting said video imaging means and including means defining an opening in said optical device coupling end, said housing enclosing and supporting said video imaging means at distance from said opening which distance is determined by the space between the imaging surface and the optical device coupling end to pass a said optical image from an optical device operatively coupled to the housing, through the opening in the optical device coupling end and distance located between each opening and imaging surface onto the imaging surface;

circuit means operatively coupled to said video imaging means and formed into a predetermined geometrical shape which defines a passageway adapted to pass a said optical image, said circuit means being positioned in said distance located between said opening and said imaging surface with said passageway positioned relative to the opening and said imaging surface to permit a said optical image to pass from said opening through said passageway and said distance located between said opening and imaging surface onto said imaging surface, said circuit means including

means responsive to said electrical video signal and for producing a preamplified electrical video signal therefrom having signal to noise ratio which is at least 40 decibels; and

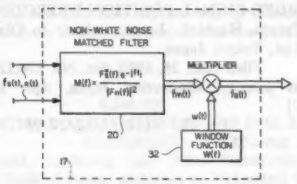
driving circuit means electrically connected to said preamplifying means and to an output circuit for applying a said amplified video signal having a signal to noise ratio of at least 40 decibels to said output circuit.

4,344,093

DELAY AND OPTIMUM AMPLITUDE EQUALIZERS FOR A READBACK CIRCUIT

William D. Huber, San Jose, Calif., assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,365
Int. Cl.³ G11B *5/09, 5/02*
U.S. Cl. 360—45 **8 Claims**



1. In a magnetic recording readback system, pulse improvement circuitry comprising in combination;

transducer circuit means for producing signals which vary in pulse width to be greater and alternatively lesser than a predetermined time duration and each of which includes data characteristics, noise characteristics and a signal to noise ratio,

equalizer means coupled to receive the output signals from said transducer circuit means implemented in accordance with a final transfer function wherein said final transfer function is a mathematical convolution of first and second transfer functions,

said first transfer function comprising a matched filter function which enables said equalizer means to operate on said signals from said transducer circuit means to improve said signal to noise ratio thereof,

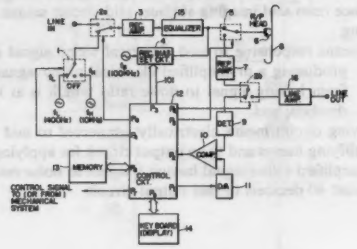
said second transfer function comprising a window function which further enables said equalizer means to operate on said signals from said transducer circuit means to limit the pulse widths of said signals to be less than said predetermined time duration.

4,344,094

METHOD AND APPARATUS DETECTING AND SETTING OPTIMUM TAPE RECORDING BIAS

Yasushi Ohtake, and Tsunao Hasegawa, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,265
Claims priority, application Japan, Nov. 24, 1978, 53-145059
Int. Cl.³ G11B *5/47, 27/36*
U.S. Cl. 360—66 **8 Claims**



1. A method for detecting and setting optimum recording bias levels in a magnetic recording and reproducing device comprising the steps of:

recording a plurality of test signals of predetermined levels on a recording medium with a variable recording bias applied to said test signals;

varying said recording bias applied to said recording medium while said test signals are being recorded;

reproducing said test signals once; and

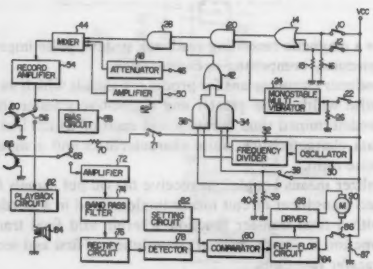
comparing the reproduced test signals with each other to determine when a predetermined level relationship exists among said reproduced test signals.

4,344,095

RECORDED-SIGNAL POSITION DETECTING CIRCUIT

Kenzi Furuta, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 26, 1980, Ser. No. 134,122
Claims priority, application Japan, Apr. 10, 1979, 54-47067[U]
Int. Cl.³ G11B *15/52, 27/28*
U.S. Cl. 360—73 **5 Claims**



1. In a magnetic tape recording and reproducing device having a multi-speed recording mode which is settable to carry out recording at a selected one of a plurality of different tape recording speeds, a reproducing mode arranged to have the same tape speeds as that of the recording mode and a detecting mode in which a magnetic head contacts with a magnetic tape which is caused to travel at a speed higher than the tape speed in the recording mode by the rotation at a prescribed speed of a reel shaft serving to wind up the tape, said prescribed speed being higher than the rotation speed of the reel shaft in the recording mode and in the reproducing mode,

an improved recorded-signal position detecting circuit comprising:

a signal generating means for generating an output cue signal having one of a plurality of frequencies, each of said output cue signal frequencies being lower than the frequency of an aural signal and in proportion to a given one of said plurality of tape recording speeds, the output cue signal generated by the generating means being in proportion to the set tape recording speed of the recording mode;

recording means coupled to the signal generating means for recording the output cue signal of said signal generating means on a magnetic tape at a predetermined position on the tape in the recording mode;

reproducing means coupled to the magnetic tape for reproducing from the magnetic tape, in the detecting mode, an output cue signal of said signal generating means which was previously recorded on said magnetic tape, the reproducing means comprising a single bandpass filter whose frequency pass band is lower than the frequency band of said aural signal, the signal reproduced from said magnetic tape being passed through said single bandpass filter for extracting from the signals on said magnetic tape the output cue signal of said signal generating means which was previously recorded in said magnetic tape; and

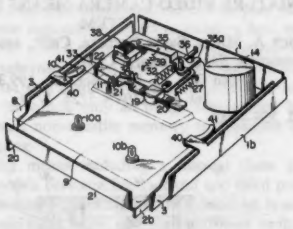
detecting means coupled to said reproducing means for detecting, in the detecting mode, the number of signals reproduced by said reproducing means and for producing a coincidence signal when said number of reproduced signals coincides with a predetermined number of signals.

4,344,096

CASSETTE TAPE RECORDER

Shinsaku Tanaka, Tokyo, and Kunio Kido, Wako, both of Japan, assignors to Tanashin Denki Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1980, Ser. No. 119,371
Claims priority, application Japan, Nov. 9, 1979, 54/145116
Int. Cl.³ G11B *15/66, 5/54*
U.S. Cl. 360—96.5 **4 Claims**



1. A cassette tape recorder comprising:

a fixed case;

a cassette holding board having a cassette loading section for detachably supporting a tape cassette;

at least one reel shaft mounted to said cassette holding board;

at least one capstan shaft mounted to said cassette holding board;

said cassette holding board being slidably mounted to said fixed case for movement in a direction perpendicular to the axes of said reel shaft and said capstan shaft between a first position wherein said holding board is drawn from said fixed case for supporting a cassette and a second position wherein said holding board is inserted in said fixed case;

a magnetic head and pinch roller movably mounted to said holding board for movement toward and away from said cassette loading section;

means for moving said magnetic head and pinch roller toward said cassette loading section when said holding board moves from said first position to said second position and away from said cassette loading position when said holding board moves from said second position to said first position; and

a cassette-pressing plate spring mounted within said fixed case for fixing said tape cassette to said cassette loading section when said cassette loading board moves from said first position to said second position, with said tape cassette being supported on said cassette loading section.

4,344,097

LOCK MECHANISM FOR USE IN TAPE PLAYER

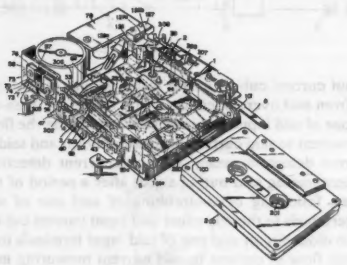
Kazuki Takai, Toda, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1980, Ser. No. 129,635

Claims priority, application Japan, Mar. 14, 1979, 54/031643[U]; Mar. 14, 1979, 54/031644[U]

Int. Cl.³ G11B *15/00, 19/18*

U.S. Cl. 360—96.6 **1 Claim**



1. In a tape player including a frame; the improvement in lockable mechanisms responsive to the insertion of a tape cassette into the player, said mechanisms comprising a slide member provided so as to slide relative to said frame; an actuating member rotatably fitted to said slide member; a lock-operating member mounted for movement relative to said actuating member in response to the insertion of a cassette into the tape player; an engaging member provided on said actuating member so as to engage with and disengage from said slide member; a projection formed on said lock-operating member for operating said engaging member, said projection being adapted to engage with and move said engaging member when said engaging member is operated in one direction; first guide means for guiding said engaging member into a locking position; means for resetting said lock-operating member; and a second guide means for guiding said engaging member and letting said projection pass over said engaging member when said lock-operating member is reset, said projection having on one side face thereof tow edges for changing over a guiding direction for the engaging member and, on another side face thereof, an inclined edge for pushing said engaging member into said second guide means to reset said projection.

4,344,098

CASSETTE TAPE PLAYER

Teturo Kamimura; Masahiro Komatsubara; Shizuo Ando, and Takugi Inanaga, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 21, 1980, Ser. No. 151,978

Claims priority, application Japan, May 22, 1979, 54-062910; May 22, 1979, 54-067724[U]

Int. Cl.³ G11B *5/008*

U.S. Cl. 360—96.6 **6 Claims**

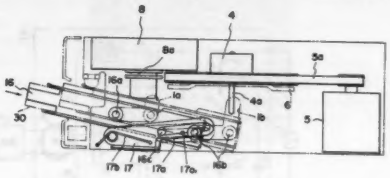
1. A cassette tape player comprising

a chassis having upper and bottom surfaces,

a capstan extending downward from the upper surface of the chassis,

a box-like receptacle for receiving a cassette therein, movably mounted in the chassis at an oblique position with respect to the chassis bottom, the trailing edge of said receptacle being more remote from the chassis bottom than the leading edge, and

guide means for first translating the receptacle in the oblique position, and then turning the receptacle approximately about its trailing edge to place the receptacle in a position parallel to the chassis bottom, said guide means including, at least one pair of guide grooves each formed in the chassis and consisting of a first portion extending parallel to the chassis bottom and a second portion following the first portion and forming an angle slightly larger than 90°



with the first portion, and at least one pair of guide members mounted on either side of said cassette receptacle and mated with said pair of guide grooves, wherein when said guide member reaches the intersection between the first and second portions of said guide grooves, the cassette in the receptacle is positioned with its capstan receiving opening aligned with the capstan, and when said guide member is advanced along the second portion to pivot the cassette receptacle from the oblique position to the parallel position, the capstan receiving opening of the cassette is maintained in alignment with said capstan,

said guide means being such that the capstan receiving opening in the cassette in said receptacle is maintained in constant alignment with said capstan during turning of the receptacle from the oblique position to the parallel position.

4,344,099

HEAD VERTICAL ALIGNMENT MEANS FOR A TAPE RECORDER

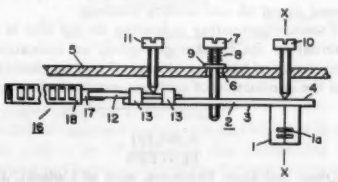
Hideo Kawachi, Ichikawa, and Niro Nakamichi, Higashikurume, both of Japan, assignors to Nakamichi Corporation, Tokyo, Japan

Filed Jun. 17, 1980, Ser. No. 160,212

Claims priority, application Japan, Jun. 18, 1979, 54-83130[U]

Int. Cl.³ G11B *21/24, 5/56*

U.S. Cl. 360—109 **4 Claims**



1. Azimuth adjustment means for a magnetic head in which a head base having a magnetic head securely mounted thereon is pivotally moved relative to a chassis by a rotary motion of an azimuth adjustment screw so as to adjust the azimuth of said magnetic head, comprising a slidable member having an in-

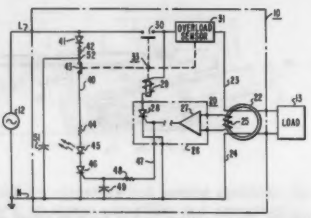
clined surface engaging said azimuth adjustment screw to be slidably interposed between said head base and said azimuth adjustment screw whereby both the rotary motion of said azimuth adjustment screw and the sliding motion of said slidable member cause said head base to move pivotally.

4,344,100

GROUND FAULT CIRCUIT BREAKER WITH GROUND FAULT TRIP INDICATOR

Ronnie D. Davidson, Bridgeport, and John J. Misencik, Shelton, both of Conn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 7, 1980, Ser. No. 175,976
Int. Cl.³ H02H *3/33*
U.S. Cl. 361—45 **3 Claims**



1. A ground fault circuit breaker, with a trip indicator for ground fault trips that is not actuated by overload trips, comprising:

a differential current transformer including a magnetic core, a plurality of primary windings on said core, each being arranged for connection with respective ones of the conductors of an AC electrical distribution system between a supply and a load, and a secondary sensing winding on said core for sensing current imbalance between said primary windings;

breaker contacts, operated by a trip mechanism, in series with at least one of the system conductors;

first means for actuating said trip mechanism upon occurrence of a predetermined sensed signal on said sensing winding;

second means for actuating said trip mechanism upon occurrence of an overload through said at least one of the system conductors;

ground fault trip indication means for indicating a trip due to operation of said first means for actuating said trip mechanism comprising a circuit branch connected between the conductors which includes a mechanical switch and a non-mechanical switch connected in series, said mechanical switch being arranged to close upon the opening of said contacts in series with at least one of the system conductors, said non-mechanical switch being arranged to become conductive upon occurrence of a predetermined sensed signal on said sensing winding,

and a static illuminating indicating device that is apparent external to the breaker providing an indication of the occurrence of both the closing of said mechanical switch and the conduction of said non-mechanical switch.

4,344,101

TESTERS

Yasuo Oishi, and Imao Ushimaru, both of Uedashi, Japan, assignors to Kaise Electric Works Ltd., Uedashi, Japan

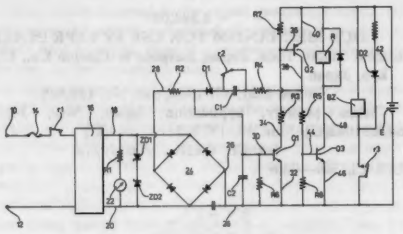
Filed Jul. 3, 1980, Ser. No. 165,665
Claims priority, application Japan, Sep. 18, 1979, 54-119643
Int. Cl.³ H02H *3/06*
U.S. Cl. 361—75 **9 Claims**

1. A circuit tester having input terminals for receiving an electrical signal having a parameter to be tested, comprising:

current measuring means for quantizing a current flowing therethrough;

means for converting a parameter of said electrical signal to be tested into a current for application to said current measuring means;

overcurrent detection means responsive to said current measured by said current measuring means for determining if said current flowing into said current measuring means exceeds a predetermined value and generating an output signal when said current exceeds said predetermined value; and



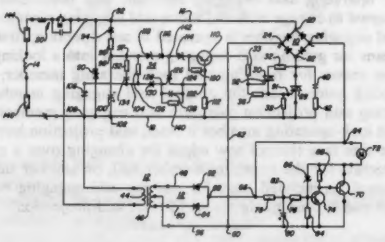
input current cut-off means responsive to said output signal from said overcurrent detection means for open-circuiting one of said input terminals and terminating the flow of said current to said current measuring means and said overcurrent detection means, said overcurrent detection means terminating said output signal after a period of time elapses following open-circuiting of said one of said input terminals to thereby cause said input current cut-off means to close circuit said one of said input terminals to reinstate the flow of current to said current measuring means.

4,344,102

ANTI-TELEGRAPH CONTROL CIRCUIT FOR ELECTROMAGNET COIL

Julian C. Kampf, Grafton; James T. Libert, Waukesha, and Winfred R. Lemke, Mequon, all of Wis., assignors to Square D Company, Palatine, Ill.

Filed Sep. 18, 1980, Ser. No. 188,407
Int. Cl.³ F16K *17/36;* H01H *47/32*
U.S. Cl. 361—154 **2 Claims**



1. A circuit for controlling the energization of an electromagnetically operated device having a stationary magnet, an armature and a coil positioned to induce magnetic flux in the magnet and armature for causing the armature to move from a first position where the armature is spaced from the magnet to a second position where the armature engages the magnet when the coil is energized by a direct current, said circuit comprising:

an alternating current source;

a pair of circuits connected between said source and coil for providing a combined but unequal output of direct current

to said coil for moving the armature from its first to second position, one of said circuits of lesser potential supplying sufficient direct current to only maintain the armature in its second position when the other circuit of greater potential is de-energized; and,

means for switching out said other circuit responsive to the armature in its second position and for locking out said other circuit from re-energization so that, if the one circuit loses potential causing the armature to move back to its first position, the other circuit remains de-energized and unable to move the armature back to its second position.

4,344,103

ELECTROMAGNETIC RELAY

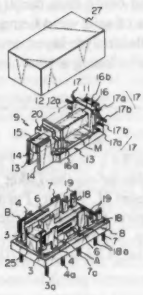
Mitsuki Nagamoto, Tsu, and Nobuo Kobayashi, Ise, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany

Filed Dec. 24, 1980, Ser. No. 219,832

Claims priority, application Japan, Apr. 10, 1980, 55-47226

Int. Cl.³ H01H *51/22*

U.S. Cl. 361—160 **13 Claims**



1. An electromagnetic relay comprising:

a switching block including an insulative base and at least two sets of terminal means, each set of terminal means comprising:

a pair of fixed contact terminals each carrying a fixed contact, and

a movable contact terminal from which a resilient movable contactor extends between said pair of fixed contacts,

said sets of terminal means being integrally held by said base along a respective side edge of said base,

said pair of fixed contact terminals of each said set being in opposed relation to each other at their ends carrying said fixed contacts, while disposed out of said opposed relation at their ends embedded in said base, and

an electromagnetic block mounted on said switching block and including:

an elongated magnetic circuit forming at least one magnetic gap at one longitudinal end,

exciting coil means including a bobbin of non-metallic insulative material and a coil winding on said bobbin, one end of said bobbin including non-metallic insulative projections extending toward one another, and

an armature having one end disposed between said projections and held thereby for rocking movement such that another end of said armature reciprocates within said gap, said armature arranged to selectively engage one of said resilient contactors when rocked by said coil means to move said engaged contactor from one position to another relative to the associated fixed contacts.

4,344,104

CORONA DEVICE

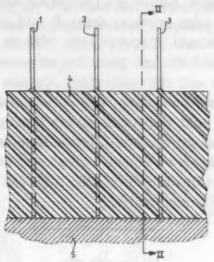
Antonius H. M. Habets, Venlo, and Henricus C. M. Krijnen, Asten, both of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Oct. 6, 1980, Ser. No. 194,090

Claims priority, application Netherlands, Oct. 10, 1979, 7907492

Int. Cl.³ H05F *3/06*

U.S. Cl. 361—230 **3 Claims**



1. A corona device suitable for use in an electrophotographic apparatus, comprising as ion-generating means a multiplicity of electrode pins provided at the same mutual spacing each from another in a body of insulating material, all the said pins having the same diameter and projecting to the same extent beyond the surface of said body, wherein said electrode pins have a diameter of between 10 and 100 microns and are spaced apart mutually by a distance of between 0.3 and 2.5 mm, and they project a distance of between 0.7 and 3 mm beyond the body of insulating material, the ratio of the length of said pins to their diameter being between 10 and 300 and the ratio of the distance between the pins to their diameter being between 4 and 250.

4,344,105

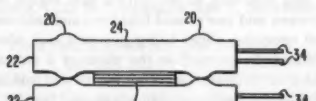
POWER CAPACITOR STRUCTURE AND METHOD OF ASSEMBLY

Barry L. Holtzman, Richland Township, Monroe County; George E. Mercier, Bloomington; Peter H. Thiel, Bloomington, and James N. Santilli, Bloomington, all of Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 12, 1980, Ser. No. 216,215

Int. Cl.³ H01G *4/38*

U.S. Cl. 361—328 **4 Claims**



1. A power capacitor comprising:

a plurality of capacitor sections stacked together in an enclosure with a set of electrical interconnections between sections and terminals extending through said enclosure to the exterior thereof, said enclosure containing an insulating fluid that fills space around said sections and impregnates said sections;

each of said sections comprising a capacitor winding including first and second foil electrodes with first and second dielectric layers on respective sides of said electrodes, said dielectric layers each including one or more sheets of film

material, said first foil electrode having rolled edges so a double thickness of said first electrode occurs in the wound sections at the rolled edges;

said electrical interconnections between said sections comprising conductive tabs located within said sections and making solely pressure contact with said foil electrodes,

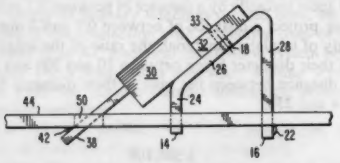
means for lessening pressure differences on portions of said stacked together capacitor sections as would otherwise result from the extra thickness of said first electrode edges, said means including by locating one or more pieces of sheet material between adjacent sections intermediate the electrode edge portions thereof, said sheet material being so dimensioned in accordance with its compressibility to result in said stacked capacitor sections having a pressure thereon at said electrode edge portions that is sufficiently light so said insulating fluid substantially completely impregnates said dielectric layers throughout the sections and a pressure thereon intermediate said electrode edge portions that is sufficiently greater so said conductive tabs within sections are in reliable pressure contact with their adjacent foil electrodes.

4,344,106

TRANSISTOR HEAT SINK ASSEMBLY

Charles E. West, Brownsburg, and Robert J. Ramspacher, Jr., Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,836
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 **4 Claims**



1. A thermally protected semiconductor assembly suitable for mounting on a printed circuit board comprising:

a heat sink comprising a rectangular sheet of metal folded at two fold lines which are substantially parallel to each other and to first and second opposing edges of said sheet, the distance between one of said fold lines and the nearest one of said opposing edges being greater than the distance between the other one of said fold lines and the other one of said opposing edges, with a first region of said sheet between said one of said fold lines and said nearest one of said opposing edges being disposed in a plane which is substantially parallel to the plane of a second region of said sheet between said other one of said fold lines and said other one of said opposing edges, said two fold lines being separated by a third region of said sheet which forms an acute angle with said first region at said one of said fold lines, and which forms an obtuse angle with said second region at said other one of said fold lines, said first and second opposing edges including means for securing said heat sink to a printed circuit board; and

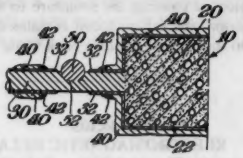
a semiconductor device including a semiconductor element encapsulated by a body of insulating material, with a heat sink tab extending from a first end of said body of insulating material and lead terminals extending from a second end of said body of insulating material, said heat sink tab being secured to said third region of said heat sink such that said first end of said body of insulating material is closer to said one of said fold lines than said second end.

4,344,107

SOLID TANTALUM CAPACITOR WITH CLEAN RISER

Dean A. Webber, Waterboro, and Peter S. Bosse, Sanford, both of Me., assignors to Sprague Electric Company, North Adams, Mass.

Filed Apr. 25, 1980, Ser. No. 143,692
Int. Cl.³ H01G 9/00, 9/05
U.S. Cl. 361—433 **2 Claims**



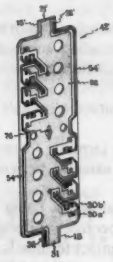
1. A solid tantalum capacitor having a tantalum anode with a riser extending therefrom, an external lead welded to said riser, a dielectric layer on said anode and said riser, and a manganese dioxide solid electrolyte layer on said dielectric layer, wherein the improvement comprises the weld between said riser and said lead being bare metal to bare metal, an area of said riser at the site of said weld being free of said dielectric layer and said solid electrolyte layer, and the solid electrolyte layer adjacent said area being a low conductivity manganese oxide.

4,344,108

FLASH LAMP ARRAY HAVING PRINTED CIRCUIT

Edward J. Collins, Mentor-on-the-Lake; Mary E. Suster, Chagrin Falls, and Vincent H. Weber, Parma, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,916
Int. Cl.³ G03B 15/02
U.S. Cl. 362—13 **10 Claims**



1. A flash lamp array comprising a plurality of flash lamps in a planar configuration, a plurality of reflectors respectively behind said flash lamps, a circuit board behind and parallel to said reflectors, a conductive shield behind and parallel to said circuit board, said circuit board including an integral connector tab at an end thereof, and terminals on said connector tab, wherein the improvement comprises circuit runs on said board of a material having an electrical resistance substantially greater than metal conductors, said circuit runs comprising a common circuit run connected between a first one of said terminals and a lead-in wire of a plurality of said lamps, said circuit runs comprising another circuit run connected between a second one of said terminals and sequential flashing circuitry, and means electrically connecting said common circuit run to said shield, said common circuit run being substantially wider than said other circuit run.

4,344,109

FLASH LAMP ARRAY HAVING PRINTED CIRCUIT

Mary E. Suster, Chagrin Falls, and Vincent H. Weber, Parma, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,917
Int. Cl.³ G03B 15/02
U.S. Cl. 362—13 5 Claims

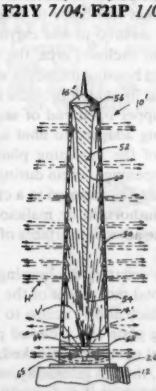
1. A flash lamp array comprising a plurality of flash lamps in a planar configuration, a plurality of reflectors respectively behind said flash lamps, a circuit board behind and parallel to said reflectors, a conductive shield behind and parallel to said circuit board, said circuit board including first and second integral connector tabs respectively at opposite ends thereof, and a plurality of terminals on each of said connector tabs, wherein the improvement comprises circuit runs on said board of a material having an electrical resistance substantially greater than metal conductors, said circuit runs comprising a common circuit run connected to a first terminal of each of said connector tabs and also connected to a lead-in wire of each of said lamps, said circuit runs comprising a run connected between a second terminal of said first connector tab and sequential firing circuitry of a first group of said lamps and a run connected between a second terminal of said second connector tab and sequential firing circuitry of a second group of said lamps, and means connecting said common circuit run to said shield adjacent to each end of said common circuit run.

4,344,110

SUPPLEMENTAL IDENTIFICATION SYSTEM FOR CHANNEL AND SIMILAR MARKER LIGHTS

Dennis W. Ruediger, Slipp 111 Keehi Marina, Honolulu, Hi. 96819

Filed Dec. 31, 1979, Ser. No. 108,442
Int. Cl.³ F21Y 7/04; F21P 1/02; B63B 21/52
U.S. Cl. 362—32 41 Claims



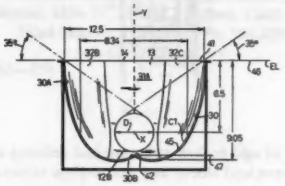
1. A marker comprising a base, an upright elongate main body mounted on said base, and signaling means in said body, said signaling means being disposed in an elongate vertical column within said body, said signaling means emitting original light uniformly from said main body continuously throughout 360 degrees in discrete visibly discernable spaced planes which are essentially horizontal so that the identity of the marker is readily apparent even against background lighting.

4,344,111

HIGH EFFICIENCY LIGHTING UNITS AND SYSTEMS USING SAME

Alan J. Ruud, West Allis, Wis., and Ian Lewin, Scottsdale, Ariz., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Division of Ser. No. 862,579, Dec. 20, 1977, Pat. No. 4,229,782.
This application Aug. 8, 1980, Ser. No. 176,717
Int. Cl.³ A61G 13/00
U.S. Cl. 362—33 7 Claims



1. In a lighting system:

a room having a floor and a ceiling:

and a lighting unit comprising a lamp and a reflector having a plurality of curved reflector surfaces, said reflector having an opening in a frontal plane defined by the edges of said curved reflector surfaces, said frontal plane being substantially parallel to said floor of said room;

said lighting unit being positioned on said floor in said room for projecting a cone of light emanating from said opening upwardly toward said ceiling for reflection downwardly therefrom;

said lighting unit being located so that said frontal plane is positioned at a distance above said floor which is about that of the average eye level of a standing human being;

said cone of light emanating from opening defining an angle of about 35° between the edge thereof and said frontal plane thereby to minimize glare to human beings present in said room.

4,344,112

ENVIRONMENTAL LAMP

Robert L. Brown, 1923 W. Greenfield, Apt. 1, Milwaukee, Wis. 53204

Filed Oct. 6, 1980, Ser. No. 193,929
Int. Cl.³ F21V 33/00
U.S. Cl. 362—96 9 Claims

1. An ornamental lamp adapted to cause circulation of air in a room between the floor and the ceiling of the room, the ornamental lamp comprising means for providing a generally vertical air flow conduit from a zone of the room adjacent the floor to a zone of the room adjacent the ceiling, said air flow conduit means including a hollow elongated cylindrical light preamble structure having a length at least several times its diameter and having an open upper end adapted to be positioned adjacent the ceiling of a room, and an open lower end adapted to be positioned adjacent the floor of a room, and said hollow elongated cylindrical structure having an inner surface, a light source supported in said hollow structure, and means for shielding a portion of said inner surface surrounding said light source from said light source, said shielding means comprising a sleeve having an open upper end and an open lower

end and providing a vertical air flow passage within said hollow structure, said sleeve being spaced inwardly from said

inner surface of said hollow structure and defining an air flow passage between said sleeve and said hollow structure.

4,344,113

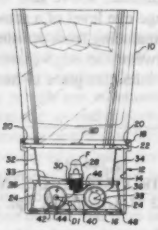
APPARATUS TO ILLUMINATE A LIQUID DRINK

Donald R. Ditto, Rte. 2, Box 60F2, Winnsboro, Tex. 75494, and John R. Sparks, Winnsboro, Tex., assignors to Donald R. Ditto, Winnsboro, Tex.

Filed Dec. 18, 1979, Ser. No. 104,972

Int. Cl.³ F21V *33/00*

U.S. Cl. 362—101 **6 Claims**



1. Apparatus to illuminate a liquid drink contained in a transparent receptacle comprising: a cylindrical hollow base having a lip formed about the upper periphery to grip the bottom portion of a transparent receptacle; an electric power source secured within said base; an electrical light source forming a columnated beam of light positioned to shine through the bottom of the transparent receptacle; an annular, conductive ring secured to the bottom of said transparent receptacle; and a pair of flexible contacts, one contact secured to one pole of said power source and the other contact secured between said light source and extending upwardly to an upper edge of said base, and arranged such that said contacts engage said ring when the transparent receptacle to form a complete circuit in energize the light source such that a columnated beam of light is shining through the bottom of the transparent receptacle to illuminate the liquid contained therein.

4,344,114

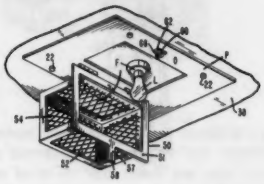
TAMPER-PROOF SECURITY DEVICE FOR SURFACE MOUNTED ELECTRICAL OUTLETS AND THE LIKE

Norbert J. Denhart, 2845 Westonridge Dr., Cincinnati, Ohio 45239

Continuation of Ser. No. 901,302, May 1, 1978, abandoned. This application Jun. 30, 1980, Ser. No. 164,791

Int. Cl.³ F21S *1/02*

U.S. Cl. 362—147 **3 Claims**



1. In combination with a building structure including a pair of spaced support members, a tamper-proof security device comprising:

(a) a flat mounting plate spanning a pair of spaced support members, the mounting plate having a central opening therethrough dimensioned to accommodate an electrical fixture which is secured relative to and carried by said spaced support members and a plurality of peripheral aperatures spaced to register with the pair of spaced support members;

(b) a plurality of anchoring elements extending through the peripheral aperatures into support members for securely positioning the plate relative to the support members, said anchoring elements being secured relative to said mounting plate against removal or withdrawal from said spaced support members;

(c) a building surface interposed between said support members and said mounting plate;

(d) a housing defined by upper, lower, side and end areas, the periphery of each of which is defined by a framework of material which is substantially cut-resistant and distortion free and see-through panels of material which is characterized by it's inherent resistance to breakage, distortion, and ease of cutting secured to and carried by said framework for defining an enclosed area, the interior of which is clearly visible, said housing including an upper open end and a flat, peripheral lip which projects outwardly of and circumscribes the upper open end of said housing, a surface of said lip being adapted to abut against those portions of a surface of the mounting plate which circumscribes the central opening therein during those periods of time when the housing is disposed in a closed position for procluding the unauthorized or malicious insertion of a pry-tool between the adjacent surfaces of said housing and mounting plate;

(e) means for hingedly securing the housing to the mounting plate to permit pivotal movement of the housing between an open position which allows access to the central opening in the mounting plate and a closed position in which access to the central opening is blocked; and

(f) means for securely, though releasably, securing the housing in the closed position for preventing unauthorized access to the interior of the housing and the opening in the mounting plate.

4,344,115

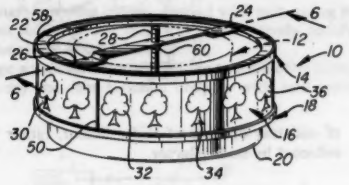
TRANSLUCENT PLASTIC LAMPSHADE

Jay W. Pickens, Fort Worth, and Linton G. Warren, Crowley, both of Tex., assignors to Rangaire Corporation, Cleburne, Tex.

Continuation of Ser. No. 5,397, Jan. 22, 1979, abandoned. This application Aug. 11, 1981, Ser. No. 177,099

Int. Cl.³ F21S *5/00*

U.S. Cl. 362—216 **4 Claims**



1. A lampshade in combination with a fluorescent lamp for attachment to a mounting bracket suspended from a ceiling comprising:
- a circular translucent shade formed from a flexible, thin-walled sheet of plastic, and dimensioned to fit about the fluorescent lamp for diffusing the light from the lamp,
- a circular upper flange formed from an integral plastic body, said flange having upper and lower surfaces,
- a circular groove formed on said lower surface and having the same diameter as said shade,
- a lip formed on said lower surface and located on the outer peripheral edge of said flange,
- said shade rigidly attached to said upper flange,
- means for attaching said upper flange to the mounting bracket,
- a circular lower flange formed from an integral plastic body, said flange having an upper surface,
- a circular groove formed on said upper surface and having the same diameter as said shade,
- a lip formed on said upper surface and located on the outer peripheral edge of said flange,
- said shade rigidly attached to said lower flange in said groove, and
- a translucent, circular, plastic lens having a diameter less than said shade and dimensioned to rest upon said upper surface of said lower flange for diffusing the light from the lamp.

4,344,116

FLAT FACE NIGHT LIGHT

Robert L. Martin, Coventry, R.I., assignor to General Electric Company, New York, N.Y.

Filed Aug. 30, 1978, Ser. No. 937,910

Int. Cl.³ H01R *33/00*

U.S. Cl. 362—226 **10 Claims**

1. A night light comprising
- a shallow cylindrical dished housing having an open and a closed face, said housing having an internal annular latching ledge,
- a pair of electric power blades mounted through the closed face of said housing and fixed in said face to permit said housing to be supported by said blades,
- an electrically powered light source electrically connected to the external ends of said power blades,
- a shallow cylindrical dished lens,
- said lens having an open face and a closed face and a diameter slightly smaller than that of said housing to permit the open face of said lens to be nested in the open face of said housing,
- the lens having an external latching rim of diameter slightly larger than the internal diameter of said latching ledge,
- and the lens being nested in the housing with the latching ledge latched over the latching rim to prevent removal of said lens.

4,344,117

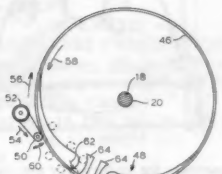
SEARCHLIGHT REVERSING MECHANISM

Richard Niccum, 1554 W. 25th St., Upland, Calif. 91786

Filed Sep. 11, 1980, Ser. No. 186,239

Int. Cl.³ F21V *21/14*

U.S. Cl. 362—250 **9 Claims**



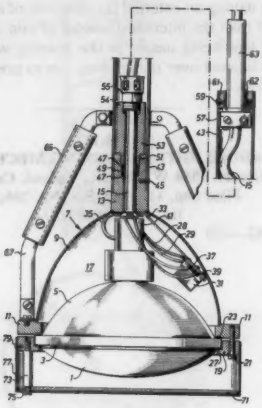
1. In a searchlight assembly having a turret including one or more searchlights mounted thereon and carried by a base member for rotation about a turret axis to rotate the searchlights, the improved mechanism for smoothly revolving the turret in an oscillating pattern of less than 360° arc comprising:
- (a) a partial cylindrical track member disposed concentrically about the turret axis and connected to the turret adjacent the base member, said track member extending over an arc equal to the desired arc of oscillation, the ends of said track member being tear-drop shaped in the plane of said track member to smoothly fold back upon itself, said tear-drop shaped ends each having a maximum radius of curvature such that a driving wheel engaging said track to rotate said turret thereby will be delayed in the transition between driving in one direction and the other a sufficient time to allow the turret to smoothly decelerate and then smoothly accelerate the turret in the opposite direction;
- (b) a mounting assembly carried by the base member adjacent said member track and including a swing-arm attached at one end for rotation about an axis parallel to the turret axis;
- (c) a drive shaft journal-mounted to the unattached end of said swing-arm parallel to the turret axis;
- (d) a drive wheel mounted on said drive shaft to contact said track;
- (e) drive motor means mounted to said mounting assembly for rotating said drive shaft;
- (f) first bias means attached to said swing-arm for holding said drive wheel against said track when said drive wheel is on the side of said track towards the turret axis;
- (g) second bias means attached to said swing-arm for holding said drive wheel against said track when said drive wheel is on the side of said track away from turret axis; and,
- (h) means for holding said drive wheel against said track in the tear-drop shaped portions during the transition between said first and second bias means holding said drive wheel against said track.

4,344,118

LAMP DEVICE FOR UNDERWATER USE

Hans M. Rundquist, and Tore G. Sköld, both of Nyköping, Sweden, assignors to Studsvik Energiteknik AB, Nyköping, Sweden

Filed Mar. 31, 1980, Ser. No. 135,862
Claims priority, application Sweden, Mar. 20, 1979, 7902877
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 7 Claims



1. A lamp assembly for underwater use, comprising:
a sealed beam lamp including a front lens, a back side, and a flange surrounding the adjacent edges of said lens and back side;
said flange including a front surface and a rear surface,
a casing disposed over said back side of said sealed lamp and forming therewith a water-tight pressure chamber,
said casing including a groove facing said rear surface of said flange,
a sealing ring disposed in said groove in sealing relationship with said casing and said rear surface of said flange to seal said chamber,
a pressing ring forming a gap with said casing and including a portion facing said front surface of said flange,
a pressure balancing packing interposed between said portion of said pressing ring and said front surface of said flange, and
means for releasably interconnecting and drawing together said pressing ring and said casing such that said pressing ring presses said flange against said seal ring, and
electrical connecting means disposed in said chamber and connected to said sealed lamp.

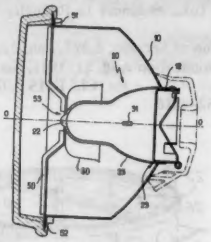
4,344,119

HEADLAMPS HAVING SEALED OPTICAL UNITS AND REPLACEABLE LIGHT BULBS

Thierry Bergot, Paris, France, assignor to Cibie Projecteurs, Bobigny, France

Filed Jul. 1, 1980, Ser. No. 164,999
Claims priority, application France, Jul. 19, 1979, 79 18697
Int. Cl.³ F21V *29/00*
U.S. Cl. 362—267 6 Claims

1. In a headlamp of the type having a sealed optical unit comprising a reflector having front and rear openings, a front lens closing said front opening of said reflector, and a transparent cup-shaped pocket closing said rear opening of said reflector and projecting into the interior of said sealed optical unit, said headlamp also including a light source removably fitted within said transparent pocket, the improvement comprising:
said transparent pocket having a portion flared outwardly towards said rear opening of said reflector, at least in the part of said pocket closest to said light source, such that any rays from said light source which are reflected from said flared portion of said pocket are directed to pass out



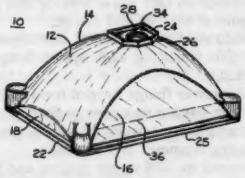
of said rear opening of said reflector, rather than being reflected by said reflector.

4,344,120

PLASTIC PAR LAMP CONSTRUCTION WITH TAPERED REINFORCEMENT

Irving Bradley, Novelty, and James M. Hanson, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,911
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—349 8 Claims



1. An improved rectangular shaped plastic reflector member having a parabolic shaped cavity, one pair of opposing generally parallel planar walls which intersect the parabolic cavity to form the longer sides of said rectangular shape, a second pair of opposing generally parallel planar walls which intersect the parabolic cavity to form the shorter sides of said rectangular shape, all said planes terminating at a rectangular shaped sealing rim, and receptacle means disposed on the rear side of said reflector which accommodates a prefocused mount construction to locate a light source at the focus of said reflector, the improvement wherein the wall thickness of said planar walls is sufficiently greater adjacent to the sealing rim than in the adjoining wall region of said parabolic cavity to avoid mechanical and heat distortion, and wherein said greater thickness region is produced by varying the wall draft angle for said molded construction.

4,344,121

CLOCKED LOGIC POWER SUPPLY

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corp., Bedford, Mass.

Filed Nov. 20, 1980, Ser. No. 208,824
Int. Cl.³ G05F *1/56;* H02P *13/32*
U.S. Cl. 363—16 24 Claims

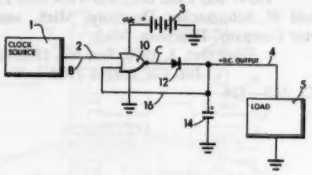
4. Power supply means whereby an electric potential is produced therefrom which is electrically regulated through the combination of:
a. a source of electric, clock pulse signal;
b. gating means having an output and at least two effective

control inputs thereto, whereby one said input is coupled with said clock pulse signal as an input thereto;

c. at least a second said input to said gating means which is substantially bilevel value voltage responsive, whereby when said voltage level is of a first level value said clock pulses coupled with said first input are enabled to actively couple with said gating means output as a signal therefrom, and further when said voltage level is of a second level value said clock pulses coupled with said first input are decoupled with said gating means output resulting in substantially no effective signal therefrom;

d. unilateral element means coupled with said gating means output and effective therewith to effectively rectify the output signal obtained therefrom;

e. charge accumulator means having two effective terminals, whereby the first terminal couples with said unilateral



element means for receiving unipolar current flow pulses therefrom as an integratively accumulated charge, whilst the second terminal couples with a common return circuit;

f. load impedance means effectively coupled between the first and the second terminal of the said charge accumulator for receiving at least some accumulated charge therefrom;

g. feedback coupling means effective to couple a signal which is a sample of the electric potential value effectively appearing at the said accumulator first terminal with the said gating means second input, thereby serving to control the flow of clock pulses between the first input and the output thereof in proportion to the effective instantaneous electric charge potential across the accumulator terminals; and,

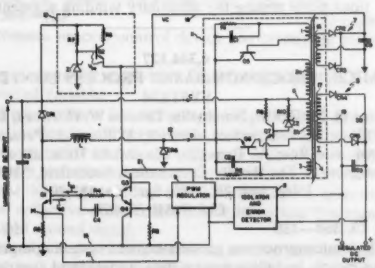
h. a source of electric d.c. power coupled with at least the said gating means and the said common return circuit.

4,344,122

CURRENT SOURCED INVERTER WITH SATURATING OUTPUT TRANSFORMER

Dwight V. Jones, Baldwinsville, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 5, 1980, Ser. No. 184,212
Int. Cl.³ H02P *13/22*
U.S. Cl. 363—23 **13 Claims**



1. A converter for converting an unregulated input voltage from a voltage source having a common terminal, to a regulated output voltage comprising:

a square wave inverter including an output transformer having primary and secondary windings;

a constant current source coupled to said inverter and supplying current to said inverter so that a substantially square wave alternating current flows in said primary winding;

control circuit means for sensing said output voltage and providing a control signal when said output voltage varies by more than a predetermined amount;

a transistor switch coupled in series with said constant current source, said transistor switch being responsive to said control signal for controlling the voltage on said primary winding so that said output voltage is maintained within predetermined limits, said transistor switch and said constant current source being coupled in the current return line of said inverter; and

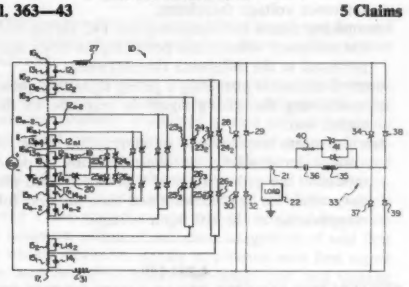
circuit means coupled between the voltage source common terminal and the emitter of said transistor switch for maintaining the emitter voltage of said transistor switch near the voltage on the common terminal of said input voltage source, allowing said control signal to be applied directly to said transistor switch.

4,344,123

MULTILEVEL PWM INVERTER

Pradeep Bhagwat, Baltimore, Md., and Victor R. Stefanovic, Charlottesville, Va., assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Sep. 14, 1981, Ser. No. 301,755
Int. Cl.³ H02M *1/12*
U.S. Cl. 363—43 **5 Claims**



1. A multilevel inverter comprising:

a voltage divider for connection across a dc source E_D for providing voltages at terminals in a decreasing sequence from $+E_D$ to $-E_D$;

a first set of controlled ac switches connected between the positive voltage terminals and a load terminal for applying selected positive voltages to the load terminal, the main ac switch connected to the potential $+E_D$ being a controlled rectifier and a reverse connected diode;

a second set of controlled ac switches connected between the negative voltage terminals and the load terminal for applying selected negative voltages to the load terminal, the main ac switch connected to the potential $-E_D$, being a controlled rectifier and a reverse connected diode; and

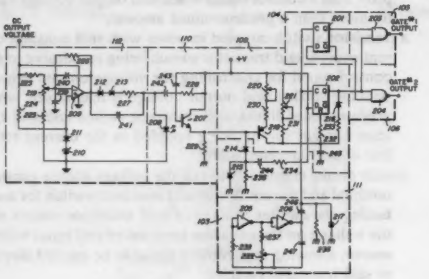
commutation means for turning off either of the main ac switches connected between the $+E_D$ terminal or the $-E_D$ terminal, the commutation means having a pair of series-connected commutation controlled rectifiers connected in parallel with the pair of main controlled rectifiers, a diode connected in reverse polarity across each of the commutation controlled rectifiers, capacitance means connected between the load terminal and a juncture between the commutation controlled rectifiers, and inductance means connected between the load terminal and the dc source.

4,344,124

START-UP TIMER FOR A SWITCHING POWER SUPPLY

Natalino Panicali, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 22, 1979, Ser. No. 22,756
Int. Cl.³ H02P 13/22
U.S. Cl. 363—49 7 Claims



1. A switching power supply adapted to provide a DC output voltage from an AC input voltage supplied by an AC voltage source, comprising:

transformer inverting means responsive to a pulse-width modulated gating signal for providing a DC output voltage;

means coupled to the DC output voltage for generating a reference voltage therefrom;

comparing means for comparing the DC output voltage to the reference voltage and providing an error signal proportional to the difference therebetween;

control means for providing a gating signal and pulse-width modulating the gating signal in response to the error signal; and

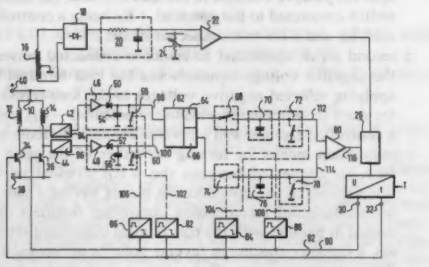
start-up means responsive to an interruption of the AC input voltage for enabling the control means to pulse-width modulate the gating signal at a predetermined maximum duty cycle for a predetermined time interval following reapplication of the AC input voltage.

4,344,125

SYSTEM FOR PRECISE REGULATION OF THE OUTPUT VOLTAGE OR CURRENT OF A PUSH-PULL INVERTER HAVING LARGE VARIATIONS OF INPUT VOLTAGE

Reinhard Kalfhaus, Mainring 10, D-6451 Mainhausen, Fed. Rep. of Germany

Filed May 14, 1981, Ser. No. 263,553
Int. Cl.³ H02P 13/00
U.S. Cl. 363—80 18 Claims



1. A method for maintaining precise regulation of the output of a push-pull inverter having primary winding means for generating said output, said primary winding means controlled by first and second alternately switched transistors, comprising the steps of:

determining the voltage time areas of the transistor output signals in each of the transistor conduction periods;

producing differential signals from the voltage time areas in consecutive transistor conduction periods;

deriving a regulation fluctuation signal from the output generated by the primary winding means;

superimposing the differential signals on the regulation fluctuation signal to produce transistor control signals; and,

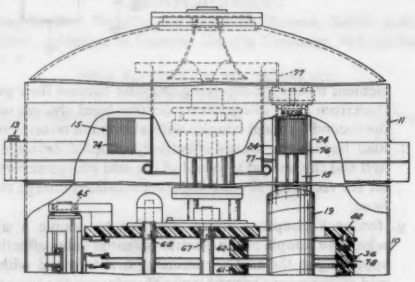
coupling the transistor control signals to the alternately switched transistors to vary the conduction periods in accordance with the differential signals, thereby reducing fluctuation of the output of the push-pull inverter and maintaining precise regulation.

4,344,126

LOW RIPPLE D.C. POWER SUPPLY

Berthold W. Schumacher, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 3, 1980, Ser. No. 193,565
Int. Cl.³ H02M 7/06
U.S. Cl. 363—126 18 Claims



1. A transformer for converting a polyphase a.c. electrical power supply to a d.c. power source comprising:

a core having a plurality of legs, the plurality corresponding in number to the number of phases of the power supply;

a primary winding having a portion thereof wound around each of the core legs;

a secondary circuit magnetically coupled to said primary winding having segments thereof connected to produce a phase shift of the output voltage with respect to the output voltage of other secondary circuit segments;

means adapted to rectify the output voltage of said secondary circuit segments whereby a d.c. voltage is produced;

means interconnecting the output of said secondary winding segments whereby power is supplied to the load at a voltage whose magnitude depends on the interconnections made among the secondary winding segments.

4,344,127

MICROPROCESSOR BASED PROCESS CONTROL SYSTEM

George H. McDaniel, Northville; Thomas W. Hartford, Livonia; William R. Hungerford, Detroit; William J. Perzanowski, Troy, and Reno V. Benaglio, Bloomfield Hills, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 28, 1980, Ser. No. 182,201
Int. Cl.³ G05B 19/403
U.S. Cl. 364—130 11 Claims

10. A microprocessor process control system comprising:

bus means, including system data, address and control buses for communicating data, address and control information to the below specified components of the system;

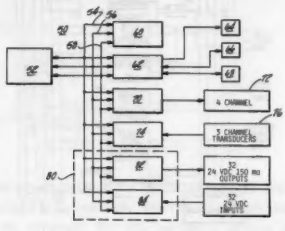
operating systems means for storing program instructions;

interactive data means for communicating input and output data to said system;

central processor means comprising processor means communicating with said operating systems means, and said interactive means for generating digital command signals and for displaying process and character information to said interactive data means, said processor means further including means for generating a predetermined number of bits of data and address information and means for multiplexing the data and the address information on an internal bus; said central processor further including

address transfer means, including latch means, communicating with said internal bus and said system address bus, for temporarily storing the address information and including buffer means for communicating the address information to said systems address bus;

data transfer means including byte swap means communicating with said internal bus and buffer means communicating with said byte swap means for transferring data to said system data bus, wherein said byte swap means contains first means for selectively transferring half of said predetermined number of bits of data information, corresponding to the low order bits, generated by said processor means to the low order bit locations of said system data bus, and for transferring half of said predetermined number of bits of data information corresponding to the high order bits generated by said processor means to the low order bit locations of said system data bus;



control bus means, responsive to status signals from said processor means for indicating when said processor means has placed address or data information on the internal bus and for communicating the status of said processor means to said system control bus;

memory means, communicating with said address and said internal bus for constant and process indicative data.

4,344,128

AUTOMATIC PROCESS CONTROL DEVICE

Robert C. Frye, Rte. 2, Box 255, Winchester, Ky. 40391

Filed May 19, 1980, Ser. No. 150,935

Int. Cl.³ G06G *7/66;* **G05B** *5/00, 7/02, 11/40*

U.S. Cl. 364—183 **23 Claims**

1. Automatic process control device comprising, in combination:

first input means for receiving a first signal proportional to a measured variable;

second input means for receiving a second signal proportional to the desired set point of said measured variable;

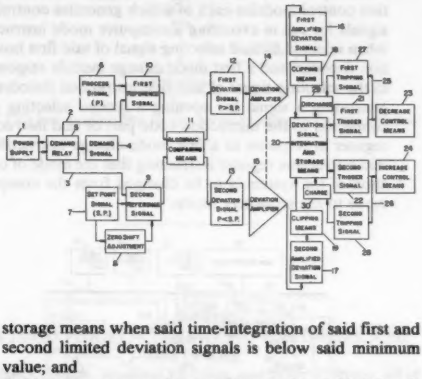
control means to selectively urge said measured variable toward a pre-selected desired value;

reference signal generating means to provide a reference signal reflective of the difference between said first signal and said second signal;

deviation signal generating means to receive said reference signal and produce a first or a second deviation signal, each proportional to the reference signal;

voltage clipping means having input means adapted to receive said first and second deviation signals to limit said first and second deviation signals to selected maximum values;

deviation signal time-integration and storage means to receive said first and second limited deviation signals and to integrate said first and second limited deviation signals on a time basis and provide a first signal from said deviation signal time-integration and storage means when said time integration of said first and second limited deviation signals is between a pre-selected minimum and a pre-selected maximum value, a second signal from said deviation signal time-integration and storage means when said time integration of said first and second limited deviation signals exceeds said pre-selected maximum value, and a third signal from said deviation signal time-integration and storage means when said time-integration of said first and second limited deviation signals is below said minimum value; and



switching means responsive to said second and third signals from said deviation signal time-integration and storage means and operably connected to said control means to operate said control means to adjust said measured variable to minimize the difference between said first and second signals and simultaneously urge said time-integration of said first and second limited deviation signals toward a mid-point between said pre-selected maximum and minimum values of said time integration of said first and second deviation signals to produce said first signal from said deviation signal time-integration and storage means.

4,344,129

DATA PROCESSOR SYSTEM CAPABLE OF PROVIDING BOTH A COMPUTER MODE AND A SEQUENCER MODE OF OPERATION

Kazuyoshi Asada, Hitachi; Hajime Yasuda, Katsuta, and Kunihiko Ohnuma, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 746,001, Nov. 30, 1976, abandoned. This application Aug. 16, 1979, Ser. No. 67,119

Claims priority, application Japan, Dec. 5, 1975, 50-144035

Int. Cl.³ G06F *9/30, 15/46*

U.S. Cl. 364—200 **6 Claims**

1. A data processor system capable of providing both a computer mode and a sequencer mode of operation comprising;

a processor unit including a main memory unit for storing data, a train of computer mode instructions and a train of sequencer mode instructions, including mode change instructions; a controlling unit for sequentially reading out the instructions in said main memory unit and for outputting a series of controlling signals for use in executing said instructions; and a data section responsive to said controlling signals from said controlling unit for performing computer mode and sequencer mode operations; and

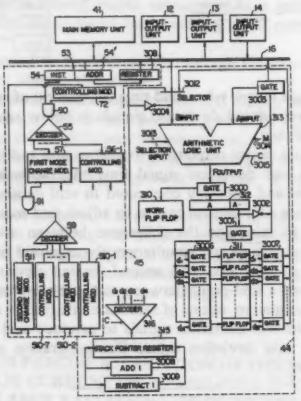
a plurality of input-output units connected with said proces-

sor unit for sending and receiving data between an external apparatus and said processor unit;

said controlling unit including;

an instruction register composed of an instruction code part and an address part for retaining an instruction having an instruction code portion and an address portion read out from said main memory;

a first controlling section operated only in response to computer mode instructions and including, a first instruction decoder connected to said instruction code part of said instruction register through a first selecting gate opened when said computer mode instructions are to be executed, for generating a selecting signal in response to the instruction code portion of said computer mode instruction retained by said instruction register; a plurality of instruction control modules each of which generates controlling signals for use in executing a computer mode instruction when selected by said selecting signal of said first instruction decoder; and a first mode change module responsive to the selecting signal of said first instruction decoder for generating a signal for opening a second selecting gate connected to the instruction code part of said instruction register in response to a first mode change instruction in said instruction register instructing that the mode of operation of the system is to be changed from the computer mode to the sequencer mode;



a second controlling section operated only in response to a sequencer mode instruction, including a second instruction decoder connected to said instruction code part of said instruction register through said second selecting gate which is opened when said sequencer mode instructions are to be executed, for generating a selecting signal in response to the instruction code portion of said sequencer mode instruction retained by said instruction register; a plurality of instruction control modules each of which generates controlling signals for use in executing a sequencer mode instruction when selected by said selecting signal of said second instruction decoder; and a second mode change module responsive to the selecting signal of said second instruction decoder for generating a signal for opening said first selecting gate in response to a second mode change instruction in said instruction register instructing that the mode of operation of the system is to be changed from the sequencer mode to the computer mode; and

said data section including arithmetic logic means responsive to the controlling signals from said controlling unit and data from said input-output units for controlling an input-output unit designated by the address portion of an instruction word.

4,344,130

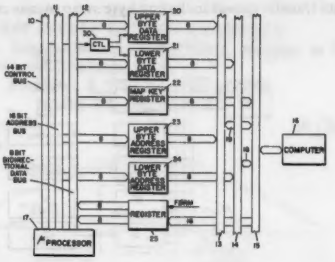
APPARATUS TO EXECUTE DMA TRANSFER BETWEEN COMPUTING DEVICES USING A BLOCK MOVE INSTRUCTION

Anthony K. Fung, Fountain Valley, and Roger G. Mintzlaff, Tustin, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 26, 1979, Ser. No. 79,209

Int. Cl.³ G06F *15/16, 13/00*

U.S. Cl. 364—200 **16 Claims**



1. In combination,

first computing means having memory means associated therewith,

said first computing means including a "block move instruction" capability,

second computing means having memory means associated therewith,

first register means for selectively transferring data from said first computing means to said second computing means,

second register means for selectively transferring data from said second computing means to said first computing means,

first bus means connected to said first computing means and each of said first and second register means for transferring data,

second bus means connected to said second computing means and each of said first and second register means for transferring data, and

control means for controlling the operation of said first and second register means and said first and second computing means,

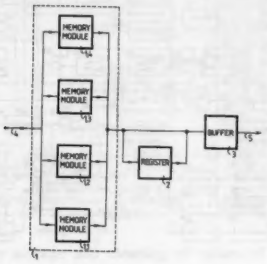
said control means includes means responsive to signals from said first computing means to provide an indication signal to indicate that said "block move instruction" is being performed by said first computing means,

said control means further includes means responsive to signals from said second computing means and to said indication signal to indicate to said control means that said second computing means desires to transfer information to or from said first computing means when said "block move instruction" is being performed by said first computing means, whereby data in said first computing means is transferred directly to said second computing means, or vice versa, depending upon which of said first and second register means is enabled for transferring data without the requirement of request and acknowledge signals.

4,344,131
DEVICE FOR REDUCING THE TIME OF ACCESS TO INFORMATION CONTAINED IN A MEMORY OF AN INFORMATION PROCESSING SYSTEM

Paul Girard, Versailles, France, assignor to Compagnie Internationale pour l' Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 6, 1979, Ser. No. 100,856
Claims priority, application France, Dec. 6, 1978, 78 34414
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—200 **2 Claims**



1. A circuit arrangement for reducing access time to information contained in a memory system of an information processing system, wherein the said memory system includes at least a memory block capable of containing a plurality of information bits and having associated therewith means for reading the information bits contained in said memory block, the improvement comprising a register connected to successively receive each information bit read from said memory block said register having at least one output and two inputs, the said output being connected to the input of the register receiving each information bit read by reading means and the other input being connected to receive at the beginning of the reading cycle of said memory block an initialization signal enabling said output into a predetermined state, said circuit arrangement being such that each information bit read by the reading means is directly available at the output of the said reading means without passing through said register.

4,344,132
SERIAL STORAGE INTERFACE APPARATUS FOR COUPLING A SERIAL STORAGE MECHANISM TO A DATA PROCESSOR INPUT/OUTPUT BUS

Jerry D. Dixon, Boca Raton; Robert H. Farrell, Coral Springs, and Francis R. Koperda, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1979, Ser. No. 103,782
Int. Cl.³ G06F *3/00, 5/06*
U.S. Cl. 364—200 **16 Claims**

5. Serial storage interface apparatus for coupling a serial storage mechanism to an input/output (I/O) bus of a data processor and comprising:

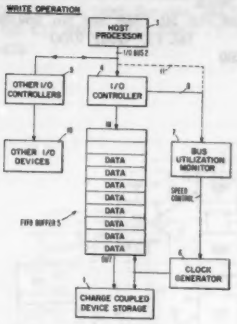
a first-in-first-out (FIFO) buffer storage mechanism;

first data transfer circuitry for coupling the FIFO buffer storage mechanism to the data processor I/O bus;

second data transfer circuitry for coupling the FIFO buffer storage mechanism to the serial storage mechanism;

bus utilization monitoring circuitry responsive to the data transfer activity of the first data transfer circuitry for generating signals representing values of I/O bus availability; and

speed control circuitry responsive to the signals representing values of I/O bus availability for causing the serial storage mechanism to operate at different speeds for different values

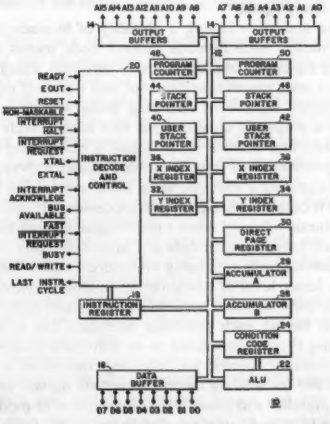


of I/O bus availability to the serial storage interface apparatus.

4,344,133
METHOD FOR SYNCHRONIZING HARDWARE AND SOFTWARE

William C. Bruce, Jr.; Fuad H. Musa, and Terry F. Ritter, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 929,628, Jul. 31, 1978, which is a continuation-in-part of Ser. No. 872,857, Jan. 27, 1978. This application Apr. 14, 1980, Ser. No. 140,336
Int. Cl.³ G06F *9/46*
U.S. Cl. 364—200 **6 Claims**

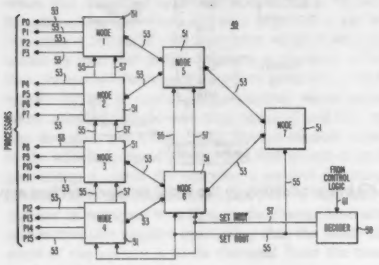


1. A method of providing high-speed synchronization between hardware and software in a digital processing system, comprising: performing a sync instruction to cause the digital processing system to assume a stopped state; waiting for an interrupt to occur; receiving an interrupt; and vectoring to an interrupt address to service the interrupt or fetching an op code which is next in sequence when the interrupt received is masked.

4,344,134
PARTITIONABLE PARALLEL PROCESSOR

George H. Barnes, Wayne, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 30, 1980, Ser. No. 164,097
Int. Cl.³ G06F 9/00
U.S. Cl. 364—200 4 Claims



1. A partitionable parallel processor control network for a plurality of parallel processors wherein each processor therein emits a ready signal when it is ready to execute a parallel processing task and initiates said parallel processing task upon receipt of an initiate signal, said partitionable parallel processor control network comprising:

a single root control node means having a plurality of processor side data lines for receiving on each a ready signal and sending back on each an initiate signal when each processor side data line in said plurality thereof is receiving a ready signal;

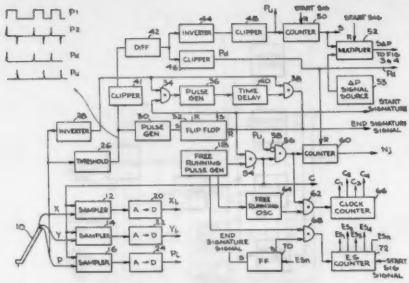
a control node tree having a plurality of bi-mode control node means, each bi-mode control node means therein having a plurality of processor side data lines, a single root control node means side data line, and a control input for designating a non-root operating mode wherein a ready signal is outputted on said signal root control node means side data line when a ready signal is being received on each processor side data line in said plurality thereof, and for designating a root operating mode wherein an initiate signal is outputted back on each processor side data line in said plurality thereof when a ready signal is being received on each processor side data line in said plurality thereof, said control node tree being configured with a first level and a lesser level of pluralities of bi-mode control node means, each said first level bi-mode control node means therein having each processor side data line in its said plurality thereof connected to an individual processor in said plurality thereof for receiving therefrom a ready signal and for sending thereto an initiate signals, said first level plurality and lesser level pluralities of bi-mode control node means being coupled in a tree-like fashion to a last level bi-mode control node means therein having each said root side data line thereof connected to an individually associated processor side data line of said single root control node means; and

designating means connected to said control input of each bi-mode control node means for designating an operating mode means of each bi-mode control node in said plurality thereof.

4,344,135
DYNAMIC CREATION OF SIGNATURES

Hewitt D. Crane, Portola Valley, and Daniel E. Wolf, Menlo Park, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Continuation of Ser. No. 633,032, Nov. 18, 1975, Pat. No. 4,156,911. This application Sep. 7, 1978, Ser. No. 940,434
The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.
Int. Cl.³ G06K 5/00, 9/00
U.S. Cl. 364—419 9 Claims



1. A method of processing signature signals to display a signature over an area having predetermined horizontal and vertical dimensions, the steps comprising:

producing a signature which is to be displayed over said area;

generating, while producing said signature, a succession of signals xi, representative of forces in the horizontal direction, and a succession of signals yi representative of forces in the vertical direction;

programming a general purpose computer to successively integrate said xi signals to form successive Xij signals;

programming said general purpose computer to successively integrate said yi signals to form successive Yij signals;

programming said general purpose computer to scale said Xij signals in accordance with said horizontal dimension, to provide Xij coordinate signals, to fit within said horizontal dimension;

programming said general purpose computer to scale said Yij signals in accordance with said vertical dimension to provide Yij coordinate signals to fit within said vertical dimension; and

utilizing said Xij and Yij coordinate signals to produce a signature which is displayable within said area, having said predetermined horizontal and vertical dimensions.

4,344,136
DEVICE FOR INDICATION OF OPERATIONAL AND COMPUTED VALUES

Ferdinand Panik, Fellbach, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jun. 20, 1980, Ser. No. 161,321
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925131
Int. Cl.³ G08B 19/00; G06F 15/20
U.S. Cl. 364—424 22 Claims

1. A device for processing operational data for vehicles having a multiposition ignition lock means, comprising

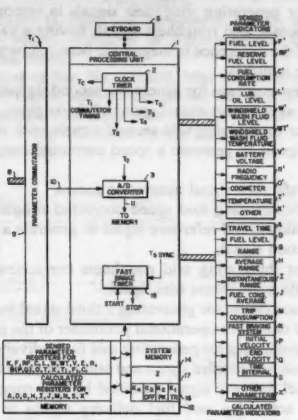
sensing means to pick up the operational data,

data processing means for receiving said sensed operational data,

means receiving processed data for display of said data,

a switch means for switching an indicator on or off when threshold values are exceeded or the value goes below the threshold in accordance with at least one of ignition lock

means positions OFF, PARK, TRIP, and START and the operational states of the vehicle, and



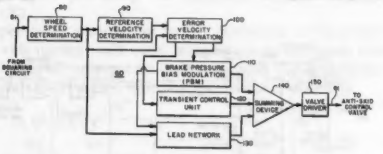
means for storage and clearing of values of a specific sequence of ignition lock means actuations.

4,344,137

APPARATUS FOR GENERATING A LEAD SIGNAL IN AN ANTISKID SYSTEM

Thomas Skarvada, Woodland Hills, Calif., assignor to Crane Co., Chicago, Ill.

Filed May 5, 1980, Ser. No. 146,617
Int. Cl.³ B60T *8/00*; G06F *15/20*
U.S. Cl. 364—426 **14 Claims**



1. In an antiskid system including a wheel, a brake coupled to the wheel, means for generating a wheel signal indicative of a selected time derivative of the angular position of the wheel, means responsive to the wheel signal for generating a brake control signal, and means responsive to the brake control signal for reducing braking action of the brake, the improvement comprising:

means for generating an input signal indicative of a predetermined time derivative of the angular position of the wheel, said predetermined time derivative corresponding to a higher order time derivative of the angular position of the wheel than the selected time derivative of the angular position of the wheel;

means for generating a gain signal in response to the input signal such that the gain signal is set to a first gain value when the input signal is within a first range of values and to a second gain value when the input signal is within a second range of values;

means, responsive to the input signal and the gain signal, for generating a lead signal which varies as a function of both the input signal and the gain signal; and

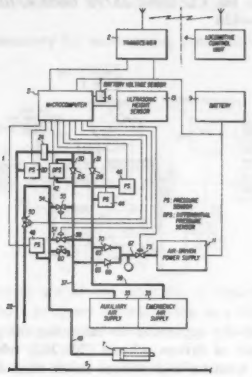
means for modifying the brake control signal as a function of the lead signal to provide lead compensation.

4,344,138

DIGITAL AIR BRAKE CONTROL SYSTEM

Cline W. Frasier, 336 Hayward Mill Rd., Concord, Mass. 01742

Filed Nov. 5, 1980, Ser. No. 203,556
Int. Cl.³ B60T *13/68*; G06F *15/20*
U.S. Cl. 364—426 **7 Claims**



1. An air brake control system for controlling the air brakes of a railroad car of the type including a train air line connected to at least one air reservoir, wherein said air reservoir is in turn connected to the brake cylinder of the railroad car, comprising:

(a) a first check valve connected between said train air line and said air reservoir for impeding the flow of air from said air reservoir back to said train air line,

(b) a differential pressure sensor connected on both sides of said check valve for measuring the difference in air pressure between said train air line and said brake cylinder,

(c) a first electropneumatic valve pneumatically connected between said air reservoir and said brake cylinder for controlling the flow of pressurized air from said reservoir into said brake cylinder,

(d) a first pressure sensor connected between said first electropneumatic valve and said brake cylinder for measuring the air pressure in said brake cylinder,

(e) a second electropneumatic valve pneumatically connected to said brake cylinder for controllably venting said brake cylinder, and

(f) a microcomputer including a radio operated transceiver unit and electrically connected to said differential pressure sensor and said first pressure sensor and said first and second electropneumatic valves for receiving electropneumatic braking signals through said transceiver and pneumatic braking signals through said train air line and opening said first electropneumatic valve to both place said brake cylinder in fluid communication with said air reservoir and lower the pressure of the air reservoir to a point where said check valve admits additional air to said air reservoir from said train air line thereby applying said air brakes and pneumatically propagating said braking signal.

4,344,139

METHOD AND APPARATUS FOR CONTROLLING DIFFERENTIALLY DRIVEN WHEEL SLIP

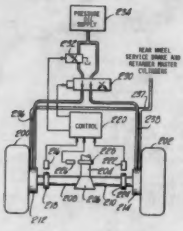
Robert G. Miller, East Peoria; Allen D. Myers, Decatur; Weldon L. Phelps, Dunlap, and Alfred W. Sieving, Venedy, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00540, § 371 Date May 7, 1980, § 102(e) Date May 7, 1980, PCT Pub. No. WO81/03153, PCT Pub. Date Nov. 12, 1981

PCT Filed May 7, 1980, Ser. No. 245,245

Int. Cl.³ G06F 15/20; B60T 8/10

U.S. Cl. 364—426 11 Claims



1. In an anti-slip apparatus for balancing the power transfer between a pair of driven wheels (200,202) when one of the wheels loses traction and rotates faster than the other, said apparatus having first means (212,214) for braking the wheels and second means (216, 222, 220) for generating a slip signal corresponding to any difference in the rotational speeds between the wheels (200, 202), the improvement comprising:

third means (230,232, 242) for actuating the first means (212, 214) on the faster rotating wheel (200, 202) to a degree which is variably incrementally modulated in proportion to the difference in rotational speeds between the wheels (200, 202) in response to the slip signal.

4,344,140

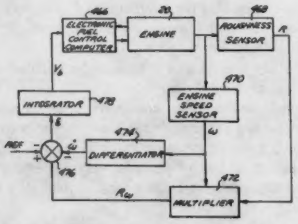
CLOSED LOOP ENGINE ROUGHNESS CONTROL

Chun-Keung Leung, Farmington, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 15, 1980, Ser. No. 187,394

Int. Cl.³ F02D 5/02; F02M 51/00; F02B 3/08

U.S. Cl. 364—431.08 13 Claims



1. A closed loop engine roughness control for an internal combustion engine having at least one combustion chamber, means for delivering a quantity of fuel to the engine in response to a fuel delivery signal, and a member receiving a torque impulse each time the fuel is burned in said at least one combustion chamber, comprising:

position reference signal generating means for generating a position reference signal indicative of incremental positions within an engine revolution correlated with an engine event;

first sensor means for generating first signals indicative of the instantaneous rotational velocity of the member relative to said position reference signal;

means for generating roughness signals in response to said first signals, said roughness signals having a value indicative of the difference in magnitude between two generated torque impulses;

second sensor means for generating second signals indicative of the average rotational speed of the engine;

means for multiplying said second signals with said roughness signals to generate a speed corrected roughness signal;

second reference signal generating means;

means for summing said speed corrected roughness signal with said second reference signal to generate a roughness correction signal;

means for integrating said roughness correction signal to generate a roughness bias signal;

third sensor means for generating a third signal indicative of at least one other operational parameter of the engine; and

fuel control means for generating said fuel delivery signals in response to said third signal and said roughness bias signal, said fuel delivery signal modified by said roughness bias signal activating said fuel delivery means to deliver a quantity of fuel to the engine maintaining said roughness signal at a predetermined value.

4,344,141

GAS-TURBINE ENGINE CONTROL

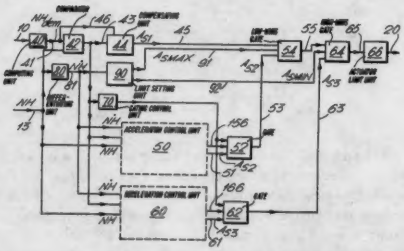
Michael S. Yates, Andover, England, assignor to Smiths Industries Limited, London, England

Filed Jun. 24, 1980, Ser. No. 162,545

Claims priority, application United Kingdom, Jun. 29, 1979, 7922683

Int. Cl.³ F02C 9/08

U.S. Cl. 364—442 15 Claims



1. A control system for controlling fuel flow to a gas-turbine engine, the system including: first means for receiving first input signals in response to demanded speed of said engine; second means for receiving second input signals in response to the actual speed of the engine; memory means storing information concerning rate of change with speed of a maximum or minimum desired fuel flow function at different engine speeds; computing means; means supplying engine speed function signals from said first and second means to said computing means; means supplying signals from said memory means to said computing means, said computing means providing an output signal indicative of rate of change with time of the fuel flow function in accordance with said signals supplied to said computing means; and means supplying said output signal to control fuel flow to the engine in predetermined circumstances.

4,344,142

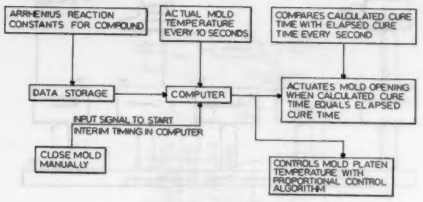
DIRECT DIGITAL CONTROL OF RUBBER MOLDING PRESSES

James R. Diehr, II, Troy, and Theodore A. Lutton, Birmingham, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Continuation of Ser. No. 472,595, May 23, 1974, abandoned, which is a continuation-in-part of Ser. No. 401,127, Sep. 26, 1973, abandoned. This application Aug. 6, 1975, Ser. No. 602,463

Int. Cl.[3] G06F *15/46;* B29H *5/02*

U.S. Cl. 364—473 11 Claims


ARRHENIUS REACTION CONSTANTS FOR COMPOUND
ACTUAL MOLD TEMPERATURE EVERY 10 SECONDS
COMPARES CALCULATED CURE TIME WITH ELAPSED CURE TIME EVERY SECOND
DATA STORAGE
COMPUTER
ACTUATES MOLD OPENING WHEN CALCULATED CURE TIME EQUALS ELAPSED CURE TIME
INPUT SIGNAL TO START INTERIM TIMING IN COMPUTER
CLOSE MOLD MANUALLY
CONTROLS MOLD PLATEN TEMPERATURE WITH PROPORTIONAL CONTROL ALGORITHM

1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:

providing said computer with a data base for said press including at least,

natural logarithm conversion data (ln),

the activation energy constant (C) unique to each batch of said compound being molded, and

a constant (x) dependent upon the geometry of the particular mold of the press,

initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,

constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,

constantly providing the computer with the temperature (Z),

repetitively performing in the computer, at frequent intervals during each cure, integrations to calculate from the series of temperature determinations the Arrhenius equation for reaction time during the cure, which is

$$\ln v = CZ + x$$

where v is the total required cure time,

repetitively comparing in the computer at frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and

opening the press automatically when a said comparison indicates completion of curing.

4,344,143

DIGITAL TYPE DISTANCE RELAY SYSTEM

Yasuhiro Kurosawa, Hino, and Tetsuo Matsushima, Fuchu, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 26, 1980, Ser. No. 134,075

Claims priority, application Japan, Mar. 27, 1979, 54-36130

Int. Cl.[3] G06F *15/20;* H02H *3/26*

U.S. Cl. 364—492 12 Claims

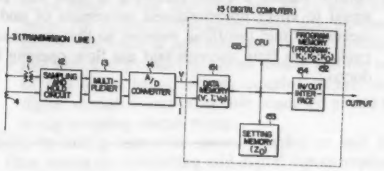
1. A digital type distance relay system comprising a sampling and hold circuit for sampling and holding the current in and voltage on a power transmission line, an analog-to-digital converter for receiving the outputs of said sampling and hold circuit through a multiplexer and converting the received analog quantities into corresponding digital quantities I and V, and a digital computer for arithmetically processing the outputs of said analog-to-digital converter on the basis of a predetermined arithmetic operation formula and producing a determination output as to whether or not to take an action for protecting said power transmission system in accordance with the result of the arithmetic processing,

said digital computer including:

a data memory for memorizing said current I and voltage V and also a digital voltage V_P having a predetermined relation to said voltage V;

a protection range setting memory for memorizing a setting value Z_0 for setting a range of protection of said power transmission system by said digital type distance relay system;

a program memory for memorizing constant values K_1 and



K_2, minimum sensitivity value K_0 of said distance relay system and a program for executing an arithmetic operation on a formula represented by

$$|I \cdot Z_0 + K_1 V_P| - |I \cdot Z_0 - V - K_2 V_P| \geqq K_0;$$

an input/output interface; and

a central processor unit coupled to said data memory, protection range setting memory, program memory and input/output interface and serving to execute said program dealing with said arithmetic operation formula and produce an output commanding an action of protecting said power transmission system if said formula is satisfied while producing an output commanding no protective action if said formula is not satisfied.

4,344,144

APPARATUS FOR CREATING GAS FLOW CYCLES

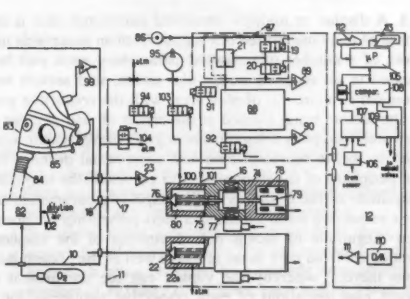
Pierre Damico, Villepreux, and Georges Jaco, Maurepas, both of France, assignors to Intertechnique, Plaisir, France

Filed May 1, 1980, Ser. No. 145,841

Claims priority, application France, May 2, 1979, 79 11071

Int. Cl.[3] A16M *17/00;* G05D *11/00*

U.S. Cl. 364—510 9 Claims



1. An apparatus for producing predetermined gas flow cycles comprising in combination:

a housing defining an inner chamber including a gas flow opening;

a movable unit having a throttling member which cooperates with said gas flow opening so that movement of said

throttling member will effect a variance of the cross-sectional area of said gas flow opening;

at least one valve means for selectively coupling in response to a first control signal said chamber to at least one of a plurality of gas sources having predetermined differing pressures;

motor means in operative communication with said movable unit for controlling the position of said movable unit in response to a second control signal;

sensor means operatively associated with said movable unit for detecting the position of said movable unit in said housing and for transmitting a position signal representative of said position; and

control means for generating at least said first and second control signals and for receiving at least said position signal to effect predetermined movement of said valve means and said throttling member so that predetermined cyclical gas flow through said gas flow opening is produced.

4,344,145

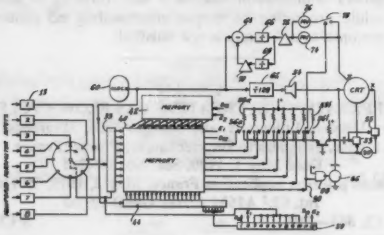
DISPLAY METHOD AND APPARATUS FOR EFFICIENTLY COMMUNICATING THE STATUS OF AN ONGOING PROCESS OR SYSTEM BY THE SIMULTANEOUS DISPLAY OF MANY NORMALIZED PARAMETER DEVIATIONS

Norman E. Chasek, 24 Briar Brae Rd., Stamford, Conn. 06903

Filed Oct. 12, 1979, Ser. No. 84,369

Int. Cl.³ G06F *3/14*

U.S. Cl. 364—551 **14 Claims**



1. A display or multiple measured parameters that is comprised of real time plotted deviations, from an acceptable mean level, of a number of measured parameters; each plot being located in an assigned wedge-like sector; said sectors being arranged in a circular display area, with the respective points of the sectors being located at the center of said circular display area; said plots using relative angular displacement, within each sector, to represent time and using radial distance from the periphery of the display area to represent the normalized magnitude of the deviation of the respective parameters from their respective mean levels; said plots presenting the normalized magnitude of recent past deviations of the respective parameters from their mean levels as well as the present deviations thereof; whereby the viewer can see the present and recent past deviations of each respective parameter for enabling the viewer to form judgments of the particular trends of the respective parameters being measured and whereby as the deviations of a parameter become larger the plot approaches closer to the point of its wedge-like sector, thereby approaching nearer to the center of the circular pattern where it is closer to the center of the viewer's gaze.

4,344,146

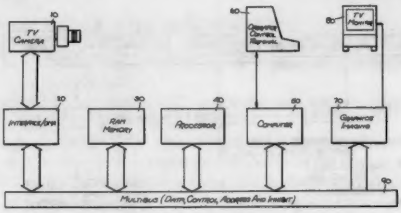
VIDEO INSPECTION SYSTEM

Ray E. Davis, Jr., Old Lyme; Richard J. Becker, Madison; Robert G. Foster, Clinton; Michael J. Westkamper, Oakdale; Earle J. Timothy, Clinton, and Richard H. Johnson, Ivoryton, all of Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed May 8, 1980, Ser. No. 148,451

Int. Cl.³ H02N *7/02*; G06F *15/20*

U.S. Cl. 364—552 **61 Claims**



29. A video inspection system comprising:

(a) a TV camera for producing digital video images of a subject, said TV camera comprising a two-axis array of picture elements, each picture element having at least sixteen levels of grey shade resolution;

(b) an interface connected to said TV camera for capturing and structuring the four most significant bits of data corresponding to each picture element, said interface having a direct memory access channel;

(c) a high speed random access memory connected to said interface by means of a multibus arrangement, said random access memory comprising a memory array comprising a series of pages for storing said digital data;

(d) a bus oriented processor connected to said interface and said random access memory by means of said multibus for performing high speed processing of said digital data stored in said memory array;

(e) a computer connected to said interface, said random access memory and said processor by means of said multibus for controlling the operation of said system; and

(f) a terminal connected to said computer and adapted to permit an operator to communicate with said computer.

4,344,147

ELECTRONIC CALCULATOR WITH PRINTER

Ichiro Sado, Tokyo; Mitsuo Cho, Ina; Juji Kishimoto, Tokyo, and Masayuki Sasaki, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 24, 1979, Ser. No. 87,706

Claims priority, application Japan, Nov. 10, 1978, 53-138441; Nov. 14, 1978, 53-140109

Int. Cl.³ G06K *15/02*; G06F *3/12*

U.S. Cl. 364—710 **2 Claims**

1. An electronic calculator for calculating a result from numerical data operated on thereby and having a printer for printing information about the calculation on a print sheet; said calculator comprising:

an input section having numerical keys for entering numerical data, arithmetic operator keys and an equals (=) key;

means for shifting the print sheet relative to the printer to print on succeeding rows; and

a control section including

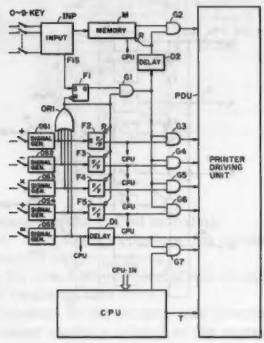
means for storing numerical data entered by said numerical keys;

means, responsive to actuation of any one of said operator keys, for operating the printer to print the first numerical data, entered into said storing means immediately prior to actuation of said one operator key, on the right-hand side of one row of the print sheet;

first delay means for operating said shifting means, after the first numerical data has been printed, to shift the print sheet relative to the printer to print on the row next succeeding said one row;

second delay means for operating the printer, only after the print sheet has been shifted relative to the printer, to print the symbol of said one of said operator keys on the left-hand side of the next succeeding row of the print sheet;

means, responsive to actuation of said equals (=) key, for operating the printer to print the last numerical data, entered into said storing means immediately prior to



actuation of said equals (=) key, on the right-hand side of the print sheet of the last row on which the symbol of an operator key has been printed;

third delay means for operating said shifting means after the last numerical data has been printed to shift the print sheet relative to the printer to print on the row succeeding the last row; and

fourth delay means for operating the printer, only after the print sheet has been shifted relative to the printer, to print the symbol (=) and the result of the calculation respectively on the left-hand and right-hand sides of the row of the print sheet succeeding the last row.

4,344,148

SYSTEM USING DIGITAL FILTER FOR WAVEFORM OR SPEECH SYNTHESIS

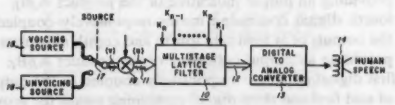
George L. Brantingham, Plano, and Richard H. Wiggins, Jr., Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 905,328, May 12, 1978, Pat. No. 4,209,844, which is a continuation of Ser. No. 807,461, Jun. 17, 1977, abandoned. This application Feb. 25, 1980, Ser. No. 124,174

The portion of the term of this patent subsequent to Jun. 24, 1997, has been disclaimed.

Int. Cl.³ G06F *15/34;* G10L *1/00*

U.S. Cl. 364—724 **30 Claims**



1. A system for synthesizing human speech in response to a plurality of digital filter codes and digital excitation signals, said system comprising:

first digital storage means for storing said plurality of digital filter codes;

generator means for generating said digital excitation signals;

digital filter means for implementing a lattice filter coupled to said first digital storage means and said generator means for producing digital signals representative of human speech in response to said plurality of digital filter codes and said digital excitation signals, said digital filter means comprising:

only one arithmetic unit, said arithmetic unit comprising a multiplier, a digital adder, and selective feedback circuitry coupling said adder and said multiplier, said selective feedback circuitry including second digital storage means for storing data outputted from said adder and circuit means selectively coupling the outputs of said adder and said second digital storage means to an input of said multiplier and to an input of said adder, the output of said adder being directly line-coupled to the input of said multiplier in one condition of said selectively coupling circuit means, and the output of said adder being directly coupled to said second digital storage means in another condition of said selectively coupling circuit means;

digital-to-analog converter means coupled to said digital filter means for converting said digital signals representative of human speech into analog signals; and

audio means coupled to said digital-to-analog converter means for converting said analog signals into audible sounds.

4,344,149

DECIMATION, LINEAR PHASE, DIGITAL FIR FILTER

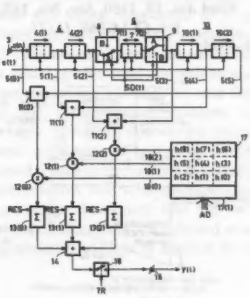
Leendert van de Meeberg, and Daniël J. G. Janssen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 8, 1980, Ser. No. 166,888

Claims priority, application Netherlands, Jul. 9, 1979, 7905332

Int. Cl.³ G06F *15/31*

U.S. Cl. 364—724 **5 Claims**



1. A decimation, non-recursive digital linear phase FIR filter with length N and decimation factor q, wherein N and q are integers, characterized by:

a filter input to which components of a digital input signal are applied at a rate 1/T, and a filter output;

a first digital delay line connected to the filter input;

a second digital delay line, said first and second digital delay lines each being provided by a cascade arrangement of a number of auxiliary delay lines, each having a time delay qT, individual distribution lines being connected, respectively, to the inputs of said first and second digital delay lines as well as to the outputs of the auxiliary delay lines forming said first and second digital delay lines;

a control circuit having means for generating first and second control pulses, wherein every two consecutive first

control pulses defines a control interval having a length qT;

a sequence reversing device, for coupling the output of the first digital delay line to the input of the second digital delay line, comprising storage means for storing those q components which occur sequentially in a control interval at the output of the first digital delay line, and means, in response to said first control pulses, for applying sequentially and in the reverse order these q components in the next control interval, to the input of the second digital delay line;

first adder means for respectively coupling distribution lines which are located symmetrically relative to a symmetry line, for forming sum components;

means for producing in each control interval a plurality of filter coefficients;

multiplying means coupled respectively to the first adder means and to the means producing the filter coefficients, for generating product components each one of which is formed by the product of a sum component and a filter coefficient associated therewith;

second adder means for adding together the product components produced in a control interval; and

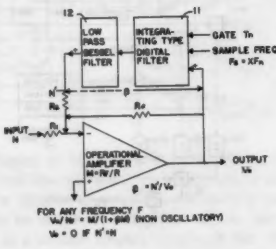
means controlled by the said second control pulses for periodically coupling, with a period qT, the filter output to the second adder means.

4,344,150

COHERENT NOISE CANCELLING FILTER

George H. McLaughlin, Tucson, Ariz., assignor to Newmont Mining Corporation, New York, N.Y.

Filed Jul. 10, 1980, Ser. No. 168,190
Int. Cl.³ G06F *15/31*
U.S. Cl. 364—724 29 Claims



1. In a coherent noise cancelling filter, the combination of:

means defining a circuit input and a circuit output;

an operational amplifier connected between said circuit input and circuit output;

a feedback circuit connected from the output of said operational amplifier to the input thereof, said feedback circuit including a digital filter and a low pass filter connected in series between said operational amplifier output and input, said digital filter including memory means and first switching means for connecting said operational amplifier to said memory means; and

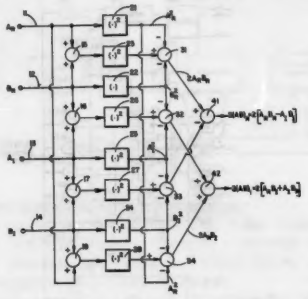
timing means for operating said first switching means to interconnect said operational amplifier output and said memory means during a predetermined time.

4,344,151

ROM-BASED COMPLEX MULTIPLIER USEFUL FOR FFT BUTTERFLY ARITHMETIC UNIT

Stanley A. White, Santa Ana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 21, 1980, Ser. No. 142,594
Int. Cl.³ G06F *7/52, 1/02*
U.S. Cl. 364—754 12 Claims



1. A digital arithmetic device for processing data and performing multiplication of two complex values, $A=(A_R+jA_I)$ and $B=(B_R+jB_I)$ and comprising:

four data input ports designated A_R, B_R, A_I and B_I, respectively, and organized as four pairs of components of both said component values as four pairs of input ports, (A_R, B_R), (A_I, B_R), (A_R, B_I), (A_I, B_I);

eight square function memories;

a first, second, third and fourth one of said memories responsively coupled to at least a respective one of said input ports as memory inputs for providing values indicative of the respective squares of said memory inputs;

a fifth, sixth, seventh and eighth one of said memories responsively coupled to a mutually exclusive pair of the four input pairs of said input ports for providing values indicative of the respective squares of a preselective combination of said mutually exclusive input pairs;

a first digital combining means responsively coupled to the outputs of at least said first and fifth memories for providing an output indicative of the product A_RB_R;

a second digital combining means responsively coupled to the outputs of at least said second and sixth memories for providing an output indicative of the product A_IB_R;

a third digital combining means responsively coupled to the outputs of at least said third and seventh memories for providing an output indicative of the product A_IB_I;

a fourth digital combining means responsively coupled to the outputs of at least said fourth and eighth memories for providing an output indicative of the product A_RB_I;

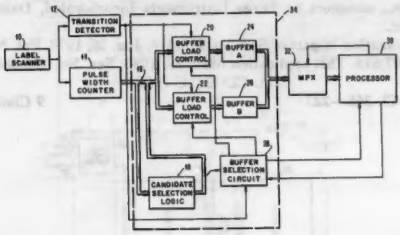
a first digital combiner responsively coupled to the outputs of said first and third digital combining means for providing an output indicative of the real component of the complex product AB; and

a second digital combiner responsively coupled to the output of said second and fourth digital combining means for providing an output indicative of the imaginary component of the complex product AB.

4,344,152
BUFFER MEMORY CONTROL CIRCUIT FOR LABEL SCANNING SYSTEM

George J. Laurer, and Charles M. Pierce, both of Raleigh, N.C., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 29, 1979, Ser. No. 98,461
Int. Cl.³ G06F 7/28
U.S. Cl. 364—900 9 Claims



1. A data storage control circuit including:

a plurality of data storage devices for storing serially-received units of incoming data;

gating means for connecting a selected one of said devices to a source of incoming data units;

a counter connected to the source, said counter having a maximum count capacity related to the storage capacity of each of said data storage devices;

candidate select logic means connected to the source for generating a candidate signal when a first number of serially-received data units satisfies predetermined criteria;

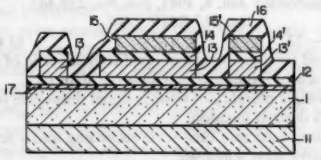
counter control means connected to said counter and to said candidate select logic means for enabling said counter to count each data unit up to the first number and to count each unit beyond the first number only when a candidate signal has been generated during the current count cycle; and

switching means connected to said counter and responsive to attainment of the maximum count therein for causing said gating means to direct subsequently received data units to a different one of said data storage devices.

4,344,153
MAGNETIC BUBBLE MEMORY DEVICE AND METHOD OF FABRICATING THE SAME

Hideki Nishida, Tokyo; Hirozi Yamada; Hiroshi Umezaki, both of Hachioji; Yutaka Sugita, Tokorozawa, and Norikazu Tsumita, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 13, 1979, Ser. No. 29,933
Claims priority, application Japan, Apr. 14, 1978, 53-43222
Int. Cl.³ G11C 19/08
U.S. Cl. 365—39 10 Claims

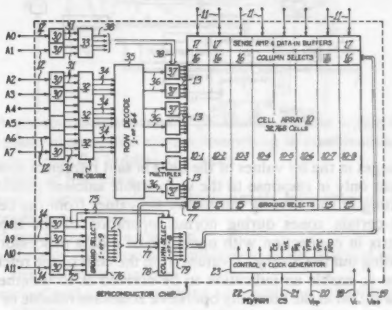


1. A magnetic bubble memory device comprising a non-magnetic monocrystalline substrate, a magnetic film capable of maintaining magnetic bubbles therein, a conductor pattern for bubble control, a dummy conductor pattern, and soft magnetic material patterns, wherein said conductor patterns lie at least between said magnetic film and said soft magnetic material and wherein the entirety of said soft magnetic material patterns overlie at least portions of said conductor patterns so as to be maintained in one plane thereby.

4,344,154
PROGRAMMING SEQUENCE FOR ELECTRICALLY PROGRAMMABLE MEMORY

Jeffrey M. Klaas, Rosenberg; Paul A. Reed, and Isam Rimawi, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 4, 1980, Ser. No. 118,288
Int. Cl.³ G11C 7/02
U.S. Cl. 365—194 8 Claims



1. An electrically programmable memory device comprising: an array of rows and columns of floating gate memory cells; each cell having a source-to-drain path, a control gate and a floating gate; the control gates of all cells in each row being connected to a row line; one end of the source-to-drain path of each cell in each column being connected to a column line and the other end being connected to a ground line whereby a continuous series path of said source-to-drain paths is provided for all cells in a row; means for selectively applying logic voltages to said lines for read operations and for selectively applying programming voltages to said lines for program operations, the programming voltages being much higher than the logic voltages; said means including delay circuitry to prevent application of said programming voltages to a column line until a time period after programming voltage is applied to a selected row line whereby a selected row line has programming voltage thereon so that the voltages of all source-to-drain paths of all cells in the selected row are equalized before programming voltage is applied to the selected column line.

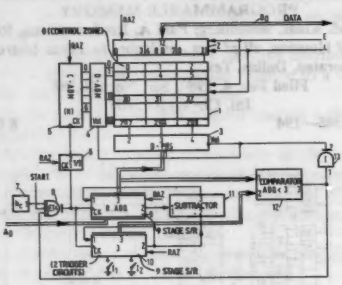
4,344,155
METHOD OF AND APPARATUS FOR INSCRIBING A CONTROL CHARACTER IN A MEMORY

Jean H. Mollier, Bougival, France, assignor to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme), Paris, France

Filed Dec. 31, 1979, Ser. No. 108,337
Int. Cl.³ G11C 11/40
U.S. Cl. 365—200 10 Claims

1. A method for enabling determination to be made as to whether binary data bit values stored in an erasable memory matrix are reliable, comprising dividing the matrix into a plurality of addressable zones, each zone including a plurality of cells for storing binary bit values, the zones being arranged so that an undesirable change in bit value in a cell of one zone due to undesirable ambient conditions is likely to be accompanied by an undesirable change in bit values in cells of other zones,

certain of said zones being normally operative during reading and writing so data changes occur therein during normal writing operations, another of said zones being a reference zone for storing a predetermined binary bit sequence but incapable of being changed during normal writing operations, writing a predetermined binary bit sequence into the cells of the reference zone, then isolating the cells of said reference zone during writing of bit values into the cells of the certain zones so that



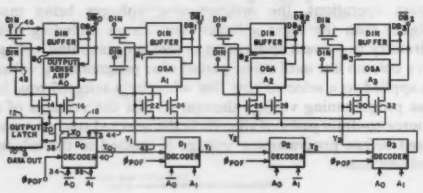
changes in the bit values of the cells in said reference zone can occur only in response to the undesirable ambient conditions, writing in and reading out binary bit values from the cells of the certain zones during normal operation of the memory matrix in connection with operation of a data processor, and reading out the binary bit values from the cells of the reference zone to enable an indication to be derived as to whether the data stored in the normally operative zones are reliable or have been affected by an undesirable change.

4,344,156

HIGH SPEED DATA TRANSFER FOR A SEMICONDUCTOR MEMORY

Sargent S. Eaton, Jr., and David R. Wooten, both of Colorado Springs, Colo., assignors to Inmos Corporation, Colorado Springs, Colo.

Filed Oct. 10, 1980, Ser. No. 195,729
Int. Cl.³ G11C *13/00*
U.S. Cl. 365—203 **9 Claims**



1. In a semiconductor memory, a system for rapidly transferring data between a plurality of successive memory locations and a data output buss in response to a single address input, comprising:

a plurality of N data latches for storing data associated with N successive memory locations which are defined by a plurality of bits of the address input;

a corresponding plurality of N serially connected decoders each associated with one of said data latches, each adapted to be enabled for causing its associated data latch to output its stored data to the data buss, and each receiving selected bits of the address input such that one of the decoders is initially enabled, in response to said selected bits having a given logic state, for causing its associated data latch to output its stored data to the data buss,

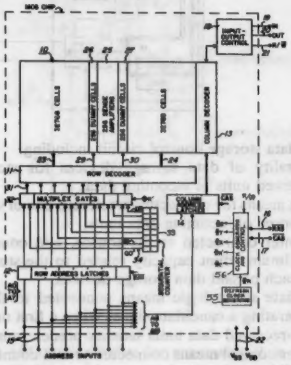
the enabled decoder being adapted to then disable itself and to enable a successive decoder, the latter decoder and each remaining decoder being adapted to disable itself after having been enabled and to enable a successive decoder so as to cause the data latches to output, to the data buss, N successive bits of data in response to a single address input.

4,344,157

ON-CHIP REFRESH ADDRESS GENERATOR FOR DYNAMIC MEMORY

Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 918,891, Jun. 26, 1978, Pat. No. 4,207,618. This application Mar. 28, 1980, Ser. No. 135,048
Int. Cl.³ G11C *7/00*
U.S. Cl. 365—222 **9 Claims**



1. A semiconductor memory device comprising an array of rows and columns of memory cells in a single integrated circuit formed in a semiconductor body, the memory cells storing data on capacitors which discharge with time, the memory device having a refresh address counter included within said body for generating row addresses along with means for changing the address in the counter to produce a sequence of row addresses including all of the rows within a refresh period during which said capacitors have not substantially discharged, and the memory device having addressing means for alternatively receiving an address from inputs to the device or from the counter and for accessing the rows of the array using said address.

4,344,158

NOISE-SUPPRESSION METHOD

Ralph A. Landrum, Jr.; Juan B. Vallhonrat, and Paul M. Perry, all of Houston, Tex., assignors to Western Geophysical Co. of America, Houston, Tex.

Continuation of Ser. No. 34,093, Apr. 27, 1979, abandoned. This application Jan. 8, 1981, Ser. No. 223,447
Int. Cl.³ G01V *1/36*
U.S. Cl. 367—73 **12 Claims**

1. A method for improving the signal-to-noise ratio of a train of received seismic signals comprising the steps of:

(a) generating a plurality of seismic-signal time-scale recordings at a desired location;

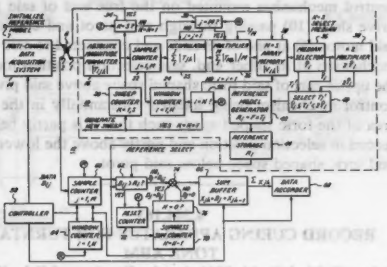
(b) separating each said time-scale recording into a series of consecutive time windows;

(c) averaging the absolute amplitudes of the seismic signals within the corresponding time windows of the respective time-scale recordings thereby providing a set of averaged absolute amplitudes for each said time window;

(d) choosing a desired one of the averaged absolute amplitudes from each said set;

(e) augmenting the chosen averaged absolute amplitudes by a preselected coefficient thereby generating a reference-model of expected substantially noisless valid seismic signals within each said time window;

(f) initiating a normal recording cycle to generate and receive a seismic signal train in response to an excitation of the earth at a first location;



(g) comparing the amplitudes of signals from the received seismic signal train, embrased within consecutive time windows, with the corresponding reference-models; and

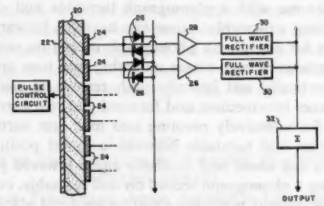
(h) rejecting as noise spikes those offending signals in said seismic signal train whose amplitudes exceed the amplitude of the reference model.

4,344,159

ULTRASONIC TRANSDUCER

Dale O. Ballinger, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 8, 1981, Ser. No. 261,998
Int. Cl.³ G01S *15/02*
U.S. Cl. 367—87 **5 Claims**



1. A phase insensitive ultrasonic transducer assembly comprising:

a piezoelectric transducer element having a unitary electrode on one major face thereof and a plurality of electrically independent electrodes on an opposite major face of said transducer element;

input pulse control means connected to said unitary electrode to excite said piezoelectric transducer element to produce a series of ultrasonic pulses for transmission into an object for study, said piezoelectric transducer element being responsive to echo pulses from within said object in accordance with discontinuities within said object;

signal responsive means connected, respectively, to each of said electrically independent electrodes to detect echo signals produced in said piezoelectric transducer element in response to said echo pulses, said signal responsive means each including full-wave rectifying means to convert said echo signals to unidirectional signals; and

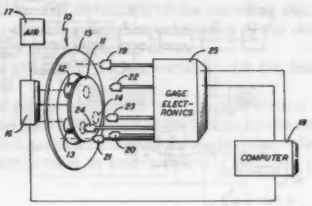
means for additively combining said unidirectional signals.

4,344,160

AUTOMATIC WAFER FOCUSING AND FLATTENING SYSTEM

Fred C. Gabriel, Stamford, and David A. Markle, Norwalk, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed May 2, 1980, Ser. No. 146,532
Int. Cl.³ G01S *15/88*
U.S. Cl. 367—96 **10 Claims**



1. A system for automatically positioning a wafer within the focal plane of an optical system comprising in combination,

platen means for holding the wafer,

a source of frequency,

sensor means providing output signals indicative of the position of the wafer,

said sensor means comprising,

a plurality of ultrasonic displacement gages disposed adjacent said platen means,

each of said gages comprising a transmitting and receiving element,

means connecting each of said transmitting elements to said source of frequency for transmitting acoustic waves for reflection by the wafer back to said receiving elements,

each of said transmitting elements having an aperture size to insure that the reflected waves are received by said receiving elements,

storage means storing data representative of the focal plane,

comparator means connected to said sensor means and said storage means providing first output signals representative of deviation of the wafer from the focal plane,

first actuator means connected to said platen means and said comparator means for moving said platen means until said first signals fall below a predetermined amount.

4,344,161

ELECTRONIC TIMEPIECE

Yoichi Wakai, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Feb. 5, 1980, Ser. No. 118,707
Claims priority, application Japan, Feb. 9, 1979, 54/13990; Dec. 21, 1979, 54/167140
Int. Cl.³ G04C *17/00;* G04B *23/02;* G04C *9/00*
U.S. Cl. 368—69 **21 Claims**

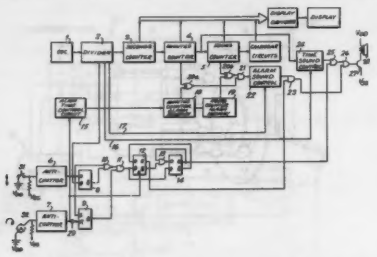
1. An electronic timepiece including an oscillator circuit generating a standard frequency signal, divider network receiving said standard frequency signal and outputting lower-frequency timekeeping signals, timekeeping circuits accumulating said timekeeping signals and outputting signals representative of units of time, display driver means for outputting driving signals, said display driver means receiving said time unit signals from said timekeeping circuits, and a display, said display being driven by signals from said display driver means, comprising:

means for performing at least one supplemental function;

control circuit means for regulating the performance of said at least one supplemental function;

an external member, said external member, when actuated,

inputting signals to said control circuit means to modify and select modes of performance, said external member including first and second switch devices, the first said switch device being operated by a linear motion of said external member, the second said switch device being operated by a rotational motion of said external member, said linear switch device being capable of performing an independent control function when said rotational switch device is not operated, said rotational device, when actu-



ated, operating in cooperation with said linear switch device; and

means for detecting rotation or non-rotation of said second switch device, said detecting means disabling the performance of said independent control function of said first linear switch device when said second switch device is rotated and enabling performance of said independent control function when said second switch device is not rotated.

4,344,162

AUTOMATIC RECORD CHANGING APPARATUS

Jean Foufounis, Denens s Morges, Vaud, Switzerland (CH-1141)

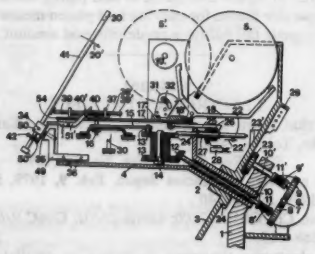
PCT No. PCT/CH79/00114, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 22, 1980, PCT Pub. No. WO80/00508, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 29, 1979, Ser. No. 196,047

Claims priority, application Switzerland, Aug. 30, 1978, 9156/78

Int. Cl.³ G11B *17/24*

U.S. Cl. 369—37 **6 Claims**



1. Automatic record changing apparatus, comprising means (20) for playing a record, a rotating magazine (3) having slots to receive the records (5), said slots formed so that the plane of each record (5) passes through the axis of rotation of said magazine (3), the assembly of the records (5) and magazine occupying a space of generally toric shape, means (6,9,23) for controlling angular displacements of the magazine (3) in order to voluntarily bring each of the records (5) into a selection position, a control mechanism (6,8,10,12,13,14,15,17 and 18) allowing the extraction of a record (5) occupying the selection position in order to bring it to a position (5') to be played by said playing means (20), then to replace it in its slot, characterized in that said apparatus comprises a base (1), a motor (6) mounted on said base for driving said rotating magazine (3) and actuating said control mechanism, a hollow pivot (2) connected to said base and extending at an angle to a horizontal plane and through the center of the toric shaped space defined by said assembly of records and magazine, said magazine rotatably mounted on said pivot so that the axis of rotation of said magazine is also inclined relative to said horizontal plane, said control mechanism mounted on the free end of said pivot, a drive shaft (10) passing through said pivot and connected to said motor (6) at one of its ends and connected to said control mechanism at its other end, said selection position located at the upper part of said toric shaped space above said pivot, said control mechanism being located substantially in the central area of the toric shaped space such that it is partly below the record in selection position and partly above the lower part of said toric shaped space below said pivot.

4,344,163

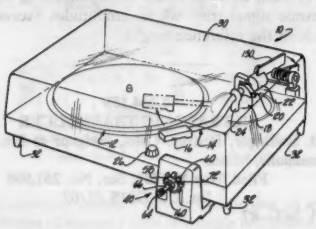
RECORD CUEING APPARATUS FOR TURNTABLE TONE ARM

Robert S. Madalinski, 5911 Argyle, Dearborn, Mich. 48126

Filed Sep. 22, 1980, Ser. No. 188,776

Int. Cl.³ G11B *3/10*

U.S. Cl. 369—40 **5 Claims**

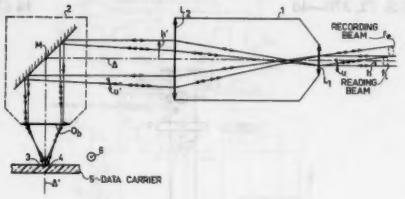


1. For use with a phonograph turntable unit of the type comprising a turntable, a tone arm having a forward end with a stylus for engaging a phonograph record on said turntable and a rearward end, means mounting said tone arm to pivot both vertically and laterally with respect to said turntable about axes intermediate said forward and rearward ends, and means for selectively pivoting said tone arm vertically with respect to said turntable between a raised position of said forward end about said turntable and a lowered position for engaging a phonograph record on said turntable, cueing apparatus for laterally positioning said forward end of said tone arm in said raised position comprising an elongated base adapted to extend beneath a turntable unit from a forward edge to a rearward edge beneath said rearward end of said tone arm, a first support upstanding from said forward edge and a second support upstanding from said rearward edge, a first knob rotatably mounted on an outer side of said first support and a first pulley mounted on an inner side of said first support, cam means comprising a coil spring, means mounting said coil spring on said rear support to rotate about an axis transverse to the elongated dimension of said base and a second pulley rotatably coupled to said spring, means extending along said base beneath the turntable rotatably coupling said first and second pulleys for selectively rotating said coil spring in either direction about said axis, and cam follower means mounted on said rearward end of said tone arm for operatively engaging said cam means in said raised position of said forward end so as to translate said rearward end and thereby pivot said forward end laterally with respect to said turntable and being spaced from said cam means in said lowered position of said forward end so as to permit free lateral movement of said forward end in said lowered position.

4,344,164
OPTICAL DEVICE FOR ACCESS TO A TRACK CARRIED BY A DATA CARRIER AND OPTICAL MEMORY SYSTEM INCORPORATING SUCH A DEVICE

Claude Bricot, and Dominique Leterme, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jul. 4, 1980, Ser. No. 174,564
Claims priority, application France, Aug. 3, 1979, 79 19973
Int. Cl.[3] G11B *7/08*
U.S. Cl. 369—44 8 Claims

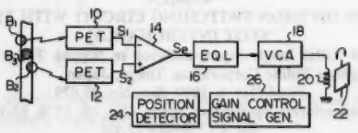


1. An optical device for access to a track on a moving data carrier, which can be optically recorded or read by focused radiation, incorporating a fixed light energy source having at least one radiating element producing a beam of parallel rays centered about an axis and collected by a moving element which moves with respect to the data carrier parallel to said axis of said beam, the moving element incorporating a deviating mirror and an objective which focuses the beam onto a predetermined track on the carrier, wherein fixed afocal optical magnifying means are inserted between the moving element and the light energy source, the magnification of said optical means being sufficient to ensure that the emergent beam substantially covers the entrance pupil of the objective, wherein the energy source comprises first and second laser emitters respectively producing the first and second parallel beams polarized in linear manner in accordance with a first and a second direction, the respective polarization directions being orthogonal to one another, the propagation direction of said first beam also coinciding with the optical axis of the afocal optical means in order to penetrate the same at a normal incidence and the direction of the second beam of parallel rays forming a predetermined small angle with the optical axis.

4,344,165
METHOD AND SYSTEM FOR A DISC PLAYER TRACKING SERVO

Toru Akiyama, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Nov. 12, 1980, Ser. No. 205,969
Claims priority, application Japan, Nov. 17, 1979, 54-159704[U]
Int. Cl.[3] G11B *7/00, 21/10*
U.S. Cl. 369—44 6 Claims



1. A method of reducing the deviation of an information detecting spot of a pickup device with respect to a target track of a rotating recording disc from which information recorded at the detecting spot on said target track is read by means of said pickup device in a recording-disc information reading and reproducing apparatus, comprising the steps of:

detecting an amount of deviation of the detecting spot from said target track;

producing a tracking error signal which is continuously variable in magnitude with the detected amount of deviation;

amplifying the tracking error signal with a variable gain;

controlling, by the amplified tracking error signal, the position of the detecting spot with respect to said target track so as to reduce said amount of deviation;

detecting the radial position of said pickup device with respect to the axis of rotation of the recording disc;

producing a detecting signal representative of the detected radial position of the pickup device;

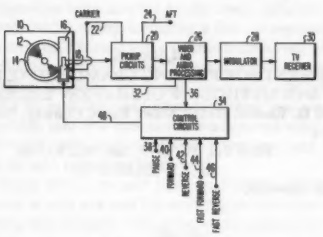
producing a gain control signal variable with the detecting signal; and

varying said gain in accordance with the gain control signal so that said gain is larger when the pickup device takes an outer radial position of the recording disc than when the pickup device takes an inner position.

4,344,166
DRIVER ARRANGEMENT FOR STYLUS LIFTING/LOWERING APPARATUS

John C. Bleazey, Trenton, and Joseph Guarracini, Lawrenceville, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 5, 1980, Ser. No. 204,384
Int. Cl.[3] G11B *3/10*
U.S. Cl. 369—216 7 Claims



1. In apparatus for use with a disc record, said apparatus being of the type comprising: a turntable for rotatably supporting said disc record, said disc record having signals recorded thereon; a signal pickup device for recovering said signals from said disc record; and means for selectively translating said arm whereby said pickup device may be selectively made to engage and disengage said disc record, said selective translating means comprising:

means responsive to an apparatus control signal for translating said pickup device at a first rate; and

means responsive to a condition of a given signal recovered from said disc record for translating said pickup device at a second rate.

4,344,167
PICKUP DEVICE

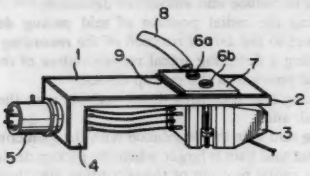
Tadashi Iwasawa, 5-26-8, Himonya, Meguro-ku, Tokyo, Japan

Continuation of Ser. No. 965,893, Dec. 4, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,633
Int. Cl.[3] G11B *21/16*
U.S. Cl. 369—247 7 Claims

1. In a pickup device comprising a head shell having a head shell base member (1) made of single crystals or polycrystalline materials containing very hard ceramics as a main component thereof, a pickup cartridge (3) fixed directedly to a surface portion of the head shell base plate member (1), and a vibration-absorbing member (9);

the improvement wherein:

said vibration-absorbing member (9) is in the shape of a thin plate and is firmly attached directly to a part of the surface of said head shell base plate member (1) different from the surface portion of said head shell base plate member to which said pickup cartridge (3) is fixed, to absorb harmful vibrations generated in the pickup cartridge (3) through the head shell;



said vibration-absorbing member (9) is composed mainly of polydiorganosiloxane and inorganic fine powders, said polydiorganosiloxane having an average molecular weight of not less than 15,000; and

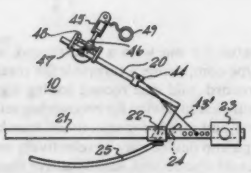
the hardness of said vibration-absorbing member (9) is within the range of from about 8 to about 30.

4,344,168

EQUIPMENT FOR PLAYING GRAMOPHONE RECORDS AND METHOD OF OPERATION THEREOF

Richard G. Enston, Bwlch Mawr Farm, Conway, North Wales, Wales

Filed Jul. 16, 1979, Ser. No. 57,798
Int. Cl.³ G11B *3/38*
U.S. Cl. 369—250 **12 Claims**



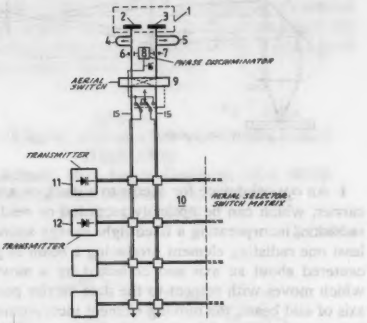
1. Equipment for playing gramophone records, in association with a turntable deck having a rotatable record supporting turntable thereon, comprising a tone arm, means for mounting the tone arm adjacent the turntable on the deck such that the arm can pivot about a vertical axis thereon, and, at least a part of the arm can pivot about a horizontal axis, a free end of the tone arm carrying a stylus disposed to track across a rotating record on the turntable, means imparting a component of linear movement of at least a part of the tone arm thus to impart to the stylus during play a degree of forward movement away from the point of pivotal attachment of the tone arm to the deck, a first guide member connected to the tone arm, and a second guide member slidably engaging said first guide member such that the first guide member is constrained and caused to advance forwardly through the second guide member as the stylus tracks across the record, thus to determine and control the track of the stylus, whereby the center line of the stylus maintains alignment with a line drawn at right angles to the record radius at the point of stylus contact therewith.

4,344,169

METHOD OF CONNECTING TWO SHORT-WAVE TRANSMITTERS IN PARALLEL

Ole Snedkerud, Windisch, Switzerland, assignor to Patelhold Patentverwertungs- & Elektro-Holding AG, Glarus, Switzerland

Continuation of Ser. No. 912,305, Jun. 5, 1978, abandoned. This application Apr. 23, 1980, Ser. No. 143,103
Claims priority, application Switzerland, Jun. 15, 1977, 7380/77
Int. Cl.³ H04B *7/00, 1/50*
U.S. Cl. 370—40 **14 Claims**



1. A method for connecting first and second transmitters, each containing its own oscillator, in parallel with one another and to first and second aerial halves, respectively, said first and second transmitters generating first and second signals, respectively, said method comprising the steps of:

applying said first and second signals to said first and second aerial halves, respectively;

generating third and fourth signals respectively representative of the phase of said first and second signals;

applying said third and fourth signals to a phase difference signal generator by means of first and second bypasses, respectively;

generating, in said phase difference signal generator, a phase difference signal representative of the phase difference between said first and second signals generated by said transmitters and applied to said respective aerial halves;

adjusting the phase of said first signal generated by said first transmitter, by means of a reactance circuit electrically connected to said oscillator of said first transmitter, as a function of said phase difference signal while said oscillator of said second transmitter is permitted to oscillate and generate said second signal independently of said phase difference signal; and

adjusting the length of at least one of said bypasses when it is desired to change the angle of said transmitters.

4,344,170

TIME DIVISION SWITCHING CIRCUIT WITH TIME SLOT INTERCHANGE

Takemi Arita, Inagi, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

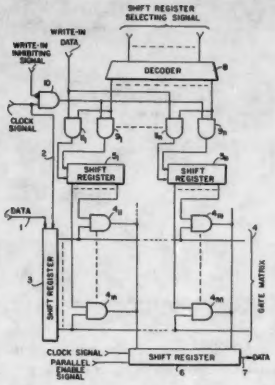
Filed Oct. 1, 1979, Ser. No. 80,679
Claims priority, application Japan, Oct. 19, 1978, 53-128710
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—68 **4 Claims**

1. A time division switching circuit with time slot interchange comprising:

an input shift register for converting one-frame binary coded data of time division multiplex type from an incoming line into a parallel bit output;

a gate matrix having cross points connected to bit output lines of said input shift register;

a plurality of control shift registers connected to the gates of said gate matrix such that each control shift register corresponds to a respective bit of an output frame, and having predetermined contents for achieving on/off control of the respective gates; and



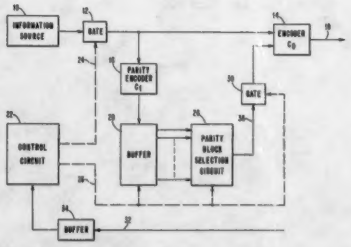
an output shift register coupled to said gate matrix for simultaneously receiving parallel bit outputs from said gate matrix, the bit array of which have been statically changed from the input data by said gate matrix, and for transmitting the parallel bit output data thus exchanged to an outgoing line as binary coded output data of time division multiplex type.

4,344,171

EFFECTIVE ERROR CONTROL SCHEME FOR SATELLITE COMMUNICATIONS

Shu Lin, Honolulu, Hi., and Philip S. Yu, Pleasantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1980, Ser. No. 215,489
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—35 **18 Claims**



1. A method for controlling transmission errors in digital data communication systems, comprising:

sending, at a transmitter, data blocks with parity digits for error detection,

detecting, at a receiver, the presence of errors in received data blocks, sending a negative acknowledgement to said transmitter, and storing the erroneous data block, and

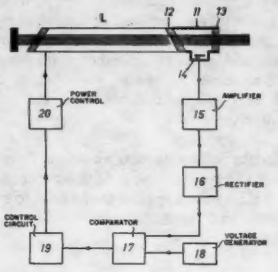
retransmitting properly selected parity blocks, and not the erroneously received data block, to said receiver for correcting errors in said erroneously received data block.

4,344,172

SYSTEM FOR MEASURING THE RADIATION POWER OF POWER-MODULATED TRANSMITTERS, IN PARTICULAR OF LASERS

Gerhard Busse, No. 14, Rosenheimer Landstrasse, 8012 Ottobrunn, Fed. Rep. of Germany

Filed Mar. 3, 1980, Ser. No. 126,632
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908157; Dec. 10, 1979, 2949564
Int. Cl.³ H01S *3/10*
U.S. Cl. 372—29 **10 Claims**



1. Apparatus for measuring the power of laser radiation transmitted along a predetermined path comprising:

(a) a housing defined by walls and containing a gas which is absorption-free with respect to the laser radiation to be measured, said housing including a first transparent window in one wall thereof and a second transparent window or a reflecting body in a wall opposite said first transparent window whereby when said housing is positioned in said path of said laser radiation said laser radiation will pass through said first and second transparent windows or pass through said first transparent window and be reflected by said reflecting body; and

(b) transducer means in said housing for sensing pressure variations in said gas and for emitting an electrical signal indicating said pressure variations, said pressure variations being proportional of the power of said laser radiation;

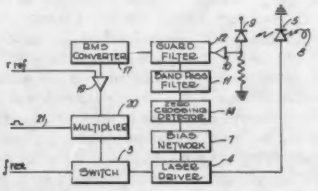
(c) whereby the power of said laser radiation transmitted along said predetermined path may be determined from the signal emitted by said transducer means.

4,344,173

STABILIZATION CIRCUIT FOR A DIGITALLY OPERATED LASER

Joseph Straus, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Continuation-in-part of Ser. No. 945,326, Sep. 25, 1978. This application Aug. 28, 1980, Ser. No. 182,098
Int. Cl.³ H01S *3/13*
U.S. Cl. 372—38 **13 Claims**



1. A method of operating an injection laser for digital transmission, the method comprising:

directing a d.c. bias current through the laser;

directing through said laser a low amplitude electrical test signal having a fundamental frequency, wherein said test signal is pulsed at a predetermined pulse repetition frequency;

monitoring light emitted from the laser in response to the bias current and said test signal;

generating an electrical analog of such monitored light;

directing the electrical analog through a filter network for passing a predetermined harmonic distortion component of said test signal;

analyzing the filter output at an analyzing network to determine a magnitude of d.c. bias current at which variation of the predetermined harmonic distortion component magnitude reaches a point corresponding to the lasing threshold current, said point being either a maximum value or a minimum value, depending on whether said predetermined harmonic distortion component is even or odd, respectively;

and

using a feedback loop, feeding an output from the analyzing network to a bias current generating means thereby to set the d.c. bias current applied to the laser to a value close to and below said threshold current.

4,344,174

GAS LASERS

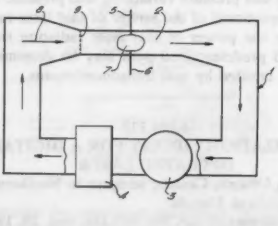
Ian J. Spalding, Didcot; Adrian C. Selden, Clifton Hampten, and Errico Armandillo, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Continuation of Ser. No. 16,023, Feb. 23, 1979, abandoned, which is a continuation of Ser. No. 782,842, Mar. 30, 1977, abandoned. This application Aug. 28, 1980, Ser. No. 182,082

Claims priority, application United Kingdom, Apr. 2, 1976, 13508/76

Int. Cl.³ H01S *3/09*

U.S. Cl. 372—91 **9 Claims**



1. A method of operating, in a pulsed mode, a transversely excited gas laser including a carbon dioxide containing lasing medium including the steps of cooling the lasing medium to a temperature such that the thermal population of the lower energy level of an output lasing transition between an upper energy level and a lower energy level of the carbon dioxide molecule is reduced, and, in each pulse, initially exciting the lasing medium to create the population inversion which results in the lasing transition at a rate which is slow enough to ensure that significant thermal population of the lower energy level is avoided during the initial excitation of the lasing medium, the lasing medium being at a pressure such that the product $a_o C\tau$ exceeds a value of approximately 30 where a_o is the small signal gain per centimeter length of the optical length of the laser, C is the velocity of light, and τ is the lifetime of the transient population immersion which results in the lasing transition.

4,344,175

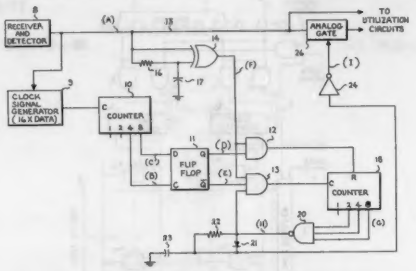
MUTING CIRCUIT

Samuel A. Leslie, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Dec. 22, 1980, Ser. No. 218,855

Int. Cl.³ H04M *11/06*

U.S. Cl. 375—5 **11 Claims**



1. A circuit for detecting the presence of data or signals having a relatively constant frequency for a predetermined time comprising:

a. a detector for indicating transitions in the state of said data or signals;

b. a synchronizing circuit for producing window signals at said frequency;

c. logic means coupled to said detector and to said synchronizing circuit for producing a count signal in response to each occurrence of an indicated transition during a window signal and for producing a reset signal in response to each occurrence of an indicated transition outside a window signal;

d. and counting means coupled to said logic means for counting in one direction in response to each count signal and for resetting said counting means in response to each reset signal.

4,344,176

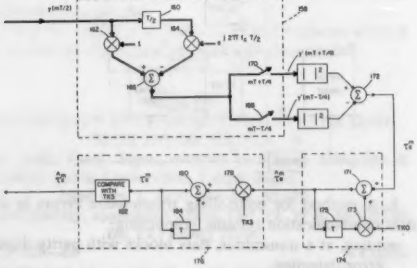
TIME RECOVERY CIRCUITRY IN A MODEM RECEIVER

Shahid U. H. Qureshi, Natick, Mass., assignor to Codex Corporation, Mansfield, Mass.

Filed Apr. 3, 1980, Ser. No. 136,921

Int. Cl.³ H04B *3/04*

U.S. Cl. 375—15 **9 Claims**



1. Modem receiver apparatus having means for receiving, demodulating, and decoding, at a first rate of 1/T bauds per second, a modulated double sideband carrier signal encoded to represent digital bits, wherein the received signal is converted to a stream of digital samples, said samples occurring at a

sample rate higher than 1/T per second, and having timing recovery circuitry comprising

phase-splitting filter circuitry connected to split said modulated double-sideband carrier signal sample stream into a pair of modulated carrier signal sample streams, the carrier frequencies associated with said pair of streams being equal but 90° apart in phase,

first means connected to the output of said filter circuitry for generating a timing signal, and

second means connected in parallel with said first means to the output of said filter circuitry for demodulating said output of said filter circuitry,

said first means comprising

first circuitry for additionally filtering said output of said filter circuitry and providing, at a second rate at least as high as 2/T per second, successive values representative of the absolute value of said additionally filtered output, and

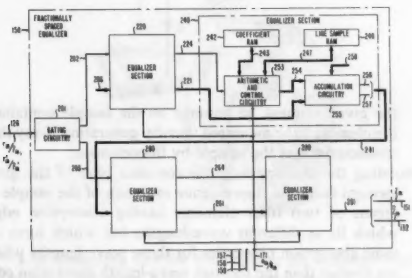
second circuitry for generating said timing signal from said successive values provided by said first circuitry.

4,344,177

EQUALIZER COMPRISED OF EQUALIZER SECTIONS WHICH INCLUDE INTERNAL ACCUMULATION CIRCUITS

George J. Kustka, Ocean, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 9, 1980, Ser. No. 195,367
Int. Cl.³ H04L *25/03*
U.S. Cl. 375—16 **5 Claims**



1. An equalizer comprised of at least first and second equalizer sections, each of said equalizer sections being adapted to multiply each of a plurality of line samples with respective coefficients to form a plurality of products,

said first equalizer section including means for generating an accumulation signal which represents the sum of the products formed in said first equalizer section and means for applying said accumulation signal to said second equalizer section,

said second equalizer section including means operative for combining the products formed in said second equalizer section with said accumulation signal and means for initiating the operation of said combining means in response to receipt by said second equalizer section from said first equalizer section of said accumulation signal.

4,344,178

COSTAS LOOP QPSK DEMODULATOR

George W. Waters, Indialantic, Fla., assignor to Harris Corporation, Melbourne, Fla.

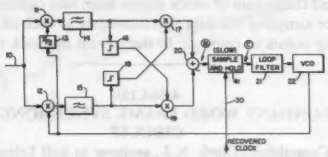
Filed Sep. 26, 1980, Ser. No. 190,914
Int. Cl.³ H03D *3/18, 3/24;* H04L *27/22*
U.S. Cl. 375—81 **8 Claims**

1. For use in a multiphase shift keying demodulator of the type including a phase adjustable reference carrier source, and means for demodulating an incoming signal with said reference carrier to provide first and second signals respectively representing the in-phase and quadrature components of said incoming signal,

an improved phase synchronization system for controlling said reference carrier comprising, in combination:

first means, responsive to said first and second signals, for detecting the polarities thereof and producing in-phase and quadrature signal signals;

second means, coupled to receive said first signal and said quadrature sign signal, for producing a first product signal, and coupled to receive said second signal and said in-phase sign signal, for producing a second product signal,



third means, coupled to said second means, and responsive to said first and second product signals, for producing and error signal representative of the difference between said first and said second product signals, and

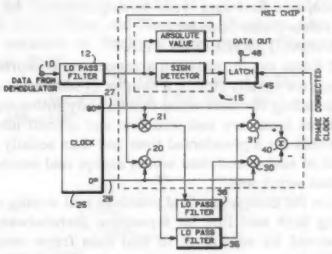
fourth means, coupled to said third means, for sampling said error signal and holding the sampled error signal, said sampled and hold signal being coupled to said adjustable reference carrier source to control the phase thereof.

4,344,179

CLOCK SYNCHRONIZER AND DATA DETECTOR

Carl R. Ryan, Gilbert, Ariz., assignor to Motorola Inc., Schaumburg, Ill.

Filed Nov. 7, 1980, Ser. No. 205,063
Int. Cl.³ H04L *7/02*
U.S. Cl. 375—110 **10 Claims**



1. In a system adapted to receive a stream of data having specific switching points defining the data, a clock synchronizer and data detector comprising:

(a) a source of clock pulses having first and second outputs with first and second reference signals available at the outputs, respectively, said reference signals being separated in phase by a predetermined number of electrical degrees;

(b) first multiplying means connected to multiply the received stream of data by each of the first and second reference signals and provide first and second products;

(c) low pass filter means connected to receive the two products from said first multiplying means and substantially reduce the noise content therein;

(d) second multiplying means connected to receive the filtered first and second products from said filter means and

the first and second reference signals from said clock source for multiplying the first product by the second reference signal and the second product by the first reference signal and providing a pair of products;

(e) combining means connected to receive the pair of products from said second multiplying means for combining the products into a single stream of clock pulses having a predetermined phase relationship with respect to the switching points of the stream of data; and

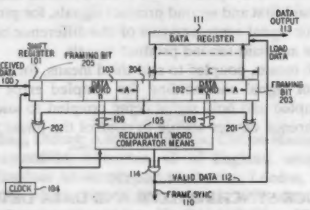
(f) sampling means connected to receive the stream of data and the stream of clock pulses from said combining means for sampling the data approximately at each of the switching points in response to the stream of clock pulses.

4,344,180

REDUNDANT WORD FRAME SYNCHRONIZATION CIRCUIT

Peter Cummiskey, Clark, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 19, 1980, Ser. No. 161,170
Int. Cl.³ H04L *7/00*
U.S. Cl. 375—116 **8 Claims**



1. A frame synchronization arrangement for use in a data communication system, said communication system arranged to transit data words in a frame format including first and second identical data words having a first bit separation therebetween, said first data word having a second bit separation from a data frame boundary

CHARACTERIZED IN THAT

said frame synchronization arrangement comprises:

means for serially storing a number of successive data words including the data word immediately following said data frame boundary and said first and second identical data words for a preselected time and then serially outputting all of said stored data words except said second identical data word; and

means for comparing data words in said storing means having both said first bit separation therebetween and said second bit separation to said data frame boundary and generating a valid comparison signal therefrom when the compared data words are the same, which valid comparison signal enables the serial outputting of data words from said storing means and is synchronous with the outputted data word immediately following said data frame boundary.

4,344,181

METHOD AND APPARATUS FOR MEASURING THE CONTENT OR QUANTITY OF A GIVEN ELEMENT BY MEANS OF X-RAY RADIATION

Nils J. Baecklund, Sunnevik, Oskarshamn, Sweden (S-572 00)

Continuation of Ser. No. 48,232, Jun. 13, 1979, abandoned. This application Dec. 9, 1980, Ser. No. 214,862
Claims priority, application Sweden, Jun. 21, 1978, 7807078
Int. Cl.³ G01N *23/22*
U.S. Cl. 378—45 **4 Claims**

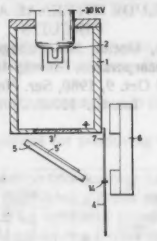
1. A method of measuring the content or amount of a given element in a sample by means of X-ray radiation comprising the steps of:

utilizing a low-power X-ray tube having an anode fabricated of anode material with characteristic X-ray lines of substantially equal to but shorter waver-length than the corresponding characteristic X-ray lines of the element to be measured, the anode comprising a thin layer of said anode material coated on a beryllium plate of a characteristic such as to provide efficient cooling;

utilizing a battery as the power supply for said low-power X-ray tube;

causing electrons from a cathode of the low-power X-ray tube to be directed onto one side of the anode of the tube such that the electrons excite primary X-ray radiation in the anode material including the radiation from the characteristic X-ray lines of the anode material;

causing the X-ray lines of the anode material, taken out as transmission radiation through the opposite side of the anode and including characteristic radiation having a wave-length which is shorter than the absorption edge of



the given element, to impinge on the sample containing the element to be measured thereby generating X-ray lines characteristic of the sample by fluorescence;

isolating the characteristic fluorescence lines of the given element from the fluorescence radiation of the sample by means of two filter elements having absorption edges which lie at different wave-lengths but which have the same absorption properties for those wave-lengths which are shorter than the shortest wave-length absorption edge of the two filter elements and for those wave-lengths which are longer than the longest wave-length absorption edge of the two filter elements, respectively; and

measuring the intensity of the characteristic X-ray lines of the element to determine the content or amount of the element, the intensity in the part of the spectrum lying between the absorption edges of the filters being determined by subtracting the intensity obtained by the filter element having the absorption edge of longer wave-length from the intensity obtained with the filter element having the absorption edge of shorter wavelength.

4,344,182

X-RAY FILM HOLDER

John S. Bostic, Parma Heights, Ohio, assignor to Joseph E. Belavich, Plant City, Fla.

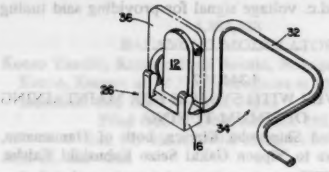
Filed Sep. 15, 1980, Ser. No. 187,441
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—170 **7 Claims**

1. A holder for supporting a piece of X-ray film properly in position within the mouth of a patient during dental operations, comprising:

(a) a spine forming a central portion of the holder;

(b) a first clip projecting outwardly of the spine, the first clip

adapted for attachment to a saliva ejector and tongue guard; and,



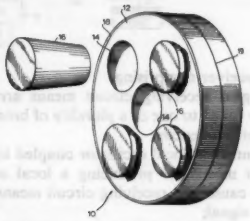
(c) a second clip projecting outwardly of the spine, the second clip adapted to hold a piece of X-ray film.

4,344,183

MEASURING TOOL FOR COMPUTER ASSISTED TOMOGRAPHIC SCANNER

Donald R. Jacobson, Madison, Wis., assignor to Radiation Measurements, Inc., Middleton, Wis.

Filed Apr. 14, 1980, Ser. No. 140,152
Int. Cl.³ G01D *18/00*
U.S. Cl. 378—207 **10 Claims**



1. A measuring tool for determining the thickness and positioning of the X-ray beam of a computer assisted tomographic scanner comprising:

a phantom (12) constructed of a material having low attenuation to X-rays and having at least two receptacles (14) formed therein;

reference line means (19) on the exterior of the phantom (12) for defining a reference plane extending therethrough;

at least two inserts (16) also formed of a material having low attenuation to X-rays and each shaped so as to fit into a one of the receptacles (14) in the phantom (12);

an image creating means for measuring the thickness and position of the X-ray beam including at least one image creating pattern (20) formed of a material having high attenuation to X-rays embedded in one of the inserts (16), the image creating pattern (20) including a center indicator (24) positioned in the reference plane and a helical pattern (22) of a preselected pitch so that the thickness and position of the X-ray beam can be measured from a tomographic image taken of the tool; and

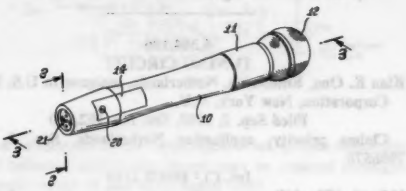
tilt detection means for detecting any tilt of the reference plane relative to the plane of the X-ray beam, including at least one other image creating pattern (20) in an insert (16), the image creating pattern (20) including a center indicator (24) and a helical pattern (22) so that any tilt in the beam can be detected by comparing the images of the two image creating patterns (20) in a tomographic image of the tool.

4,344,184

WIRELESS MICROPHONE

Robert R. Edwards, Los Alamitos, Calif., assignor to Cetec Corporation, El Monte, Calif.

Filed Jul. 31, 1980, Ser. No. 174,153
Int. Cl.³ H04B *1/034, 1/04*
U.S. Cl. 455—95 **10 Claims**



1. In a wireless microphone, the combination of:

an elongated housing of electrically nonconducting material;

a microphone unit mounted in one end of said housing;

a first electrical circuit including an audio amplifier;

a second electrical circuit including a radio frequency amplifier;

a plurality of radio frequency chokes interconnecting said first and second electrical circuits;

a conductor connecting the output of said radio frequency amplifier to said audio amplifier; and

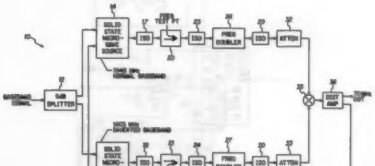
means for mounting said first and second circuits in said housing spaced from each other with said chokes positioned in the space between said circuits, with said first circuit mounted intermediate said microphone unit and said second circuit, with the electrical components of said first circuit comprising at least part of one radiator of a dipole and the electrical components of said second circuit comprising at least part of the other radiator of said dipole.

4,344,185

LOW NOISE HIGH STABILITY FM TRANSMITTER

Carroll J. Cook, Plano, and Timothy K. Henthorn, Allen, both of Tex., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 28, 1980, Ser. No. 172,737
Int. Cl.³ H04B *1/04;* H03C *3/02*
U.S. Cl. 455—110 **3 Claims**



1. An FM transmitter comprising:

means, including a microwave oscillator, for generating a carrier, at a first frequency, frequency modulated with a baseband signal;

means, including a microwave oscillator, for generating a carrier, at a second frequency, frequency modulated with said baseband signal inverted;

means for multiplying the frequency of the modulated carrier of said first frequency by a constant factor;

means for multiplying the frequency of the modulated carrier of said second frequency by said factor;

a mixer receiving each of said frequency multiplied modulated carriers,

whereby the output of said mixer is a carrier, at a third frequency equal to said factor multiplied by the difference of said first and second frequencies, frequency modulated by said baseband signal.

4,344,186

TUNING CIRCUIT

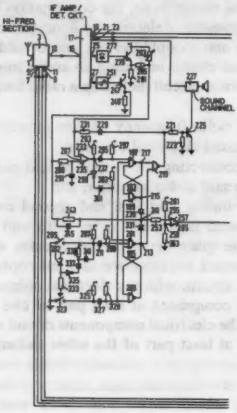
Kian K. Ong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

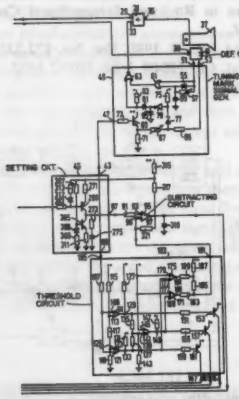
Filed Sep. 2, 1980, Ser. No. 182,930

Claims priority, application Netherlands, Sep. 3, 1979, 7906578

Int. Cl.³ H04B 1/16

U.S. Cl. 455—168 **5 Claims**





1. A tuning circuit for providing a tuning signal to a tunable device, said device including a wave range change-over circuit, said tuning circuit comprising a setting circuit for generating a setting signal for consecutively tuning over a plurality of wave ranges, a threshold circuit, to which the said setting signal is applied, for providing a changeable d.c. voltage signal, which depends on the setting signal, said d.c. voltage signal having different, constant values corresponding, respectively, to each of said wave ranges and being switchable for each wave range at preselected amplitude levels of said setting signal by means of the threshold circuit, and further comprising a subtracting circuit responsive to said setting signal and said changeable d.c. voltage signal for providing said tuning signal.

4,344,187

RADIO RECEIVER WITH SYSTEM FOR MAINTAINING OPTIMUM TUNING

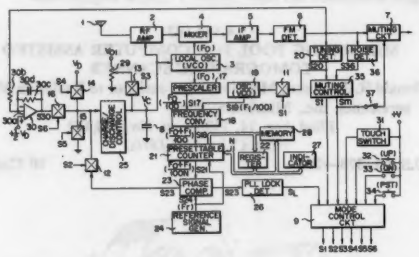
Minoru Ogita, and Shigenobu Kimura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 9, 1980, Ser. No. 195,474

Claims priority, application Japan, Oct. 18, 1979, 54-134682; Jan. 12, 1980, 55-2324

Int. Cl.³ H04B 1/16

U.S. Cl. 455—182 **11 Claims**



1. A radio receiver comprising:

broadcast signal receiving circuit means arranged to be selectively tuned to one of a plurality of broadcast signals of different frequencies;

a voltage-controlled local oscillator coupled to said receiving circuit means for producing a local oscillator frequency to cause said receiving circuit means to tune to a broadcast signal;

a capacitor coupled to said voltage-controlled local oscillator for supplying a control voltage to said voltage-controlled local oscillator to control the local oscillator frequency;

charge/discharge control circuit means coupled to said capacitor for controlling the magnitude of the voltage acrosss said capacitor, the voltage across said capacitor being said control voltage;

broadcast station selection circuit means selectively coupled to an input of said charge/discharge control circuit means for causing said charge/discharge control circuit means to vary the magnitude of said control voltage across said capacitor to automatically select a broadcast signal;

tuning error detecting means coupled to said signal receiving circuit means for detecting the tuning error of said signal receiving circuit means for a received broadcast signal, said tuning error detecting means being selectively coupled to said charge/discharge control circuit means to control the local oscillator frequency to that said receiving circuit means is exactly tuned to the received broadcast signal;

signal receiving condition detection means coupled to said receiving circuit means for detecting a signal receiving condition of a broadcast signal received by said receiving circuit means; and

control means responsive to said signal receiving condition detecting means for coupling said broadcast station selection circuit means to said charge/discharge control circuit means when a broadcast signal is selected and coupling said tuning error detecting means to said charge/dis-

charge control circuit means only when the selected broadcast signal is satisfactorily received in a good signal receiving condition.

4,344,188

BALANCED MODULATOR

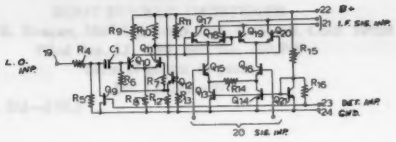
Kenzo Tanabe, Katano; Junji Suzuki, Neyagawa, and Masashi Kanno, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 9, 1980, Ser. No. 195,653

Int. Cl.³ H03D *7/14*; H03C *1/54, 1/62*

U.S. Cl. 455—326 **1 Claim**

1. A balanced modulator characterized in that said modulator is provided with a transistor balanced modulation circuit of a double balanced type using a plurality of emitter coupled transistor pairs, means for increasing bias current in said balanced modulation circuit correspondingly to an increase in an input signal level, and means for reducing local oscillation signal applied to said balanced modulation circuit, correspondingly to an increase in the input signal level, so that distortion in said balanced modulation circuit may be reduced throughout a wide range of said input signal level.



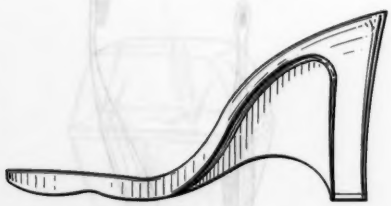
DESIGNS

AUGUST 10, 1982

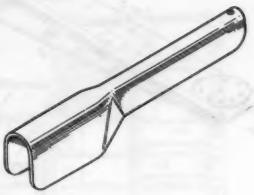
265,690
SHOE BOTTOM
Joseph P. Famolare, Jr., 4 E. 54th St., New York, N.Y. 10022
Filed Sep. 25, 1980, Ser. No. 190,839
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

265,691
SHOE BOTTOM
Joseph P. Famolare, Jr., 4 E. 54th St., New York, N.Y. 10022
Filed Sep. 25, 1980, Ser. No. 190,840
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

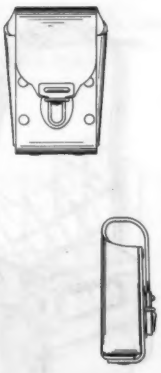
265,692
SHOE BOTTOM
Joseph P. Famolare, Jr., 4 E. 54th St., New York, N.Y. 10022
Filed Sep. 25, 1980, Ser. No. 190,841
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322



265,693
BOOT BUCKLE TIGHTENER
Ronald R. Reagan, 3547 Windmill Way, Concord, Calif. 94518
Filed Sep. 22, 1980, Ser. No. 189,785
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—378.2



265,694
BELT-MOUNTABLE CIGARETTE CASE
Tig Sogoian, 2521 K St., and Marc B. Blake, 2192 Yosemite Pkwy., both of Merced, Calif. 95340
Filed Jan. 28, 1980, Ser. No. 115,707
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400

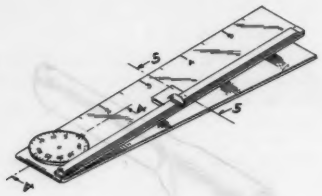


265,695

COMBINED PATTERN READER AND PLACE MARKER

Josephine L. Ciavarella, 3229 Main St., Mineral Ridge, Ohio 44440

Filed Sep. 29, 1980, Ser. No. 191,862
Term of patent 14 years
Int. Cl. D2—*99*
U.S. Cl. D3—18

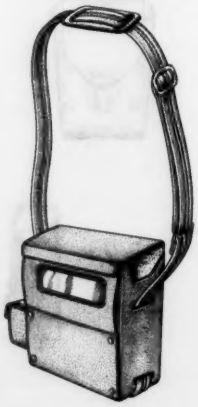


265,696

CASE FOR A VIDEO RECORDER

Andre Koszegi, South Bend, Ind., assignor to Koszegi Leather & Vinyl Products, Inc., South Bend, Ind.

Filed Jul. 30, 1980, Ser. No. 173,676
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

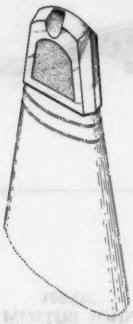


265,697

WHISK BROOM SHROUD

Robert J. Libman, and William Libman, both of Champaign, Ill., assignors to Libman Broom Company, Inc., Arcola, Ill.

Filed Aug. 21, 1980, Ser. No. 179,995
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—04



265,698

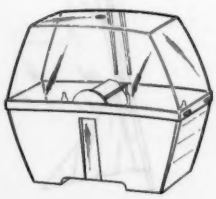
TOOTHBRUSH

Peter H. Roth, Moreland Hills, Ohio, assignor to Cook Coffee Company, Cleveland, Ohio

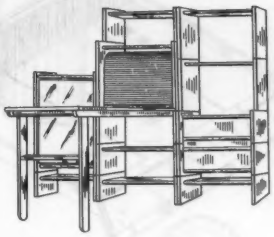
Filed May 11, 1981, Ser. No. 262,949
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

265,699
CHAIR
Gillis L. A. Lundgren, Lönashult, Sweden, assignor to Inter-Ikea A/S, Humlebaek, Denmark
Division of Ser. No. 80,166, Sep. 28, 1979. This application Jun. 26, 1981, Ser. No. 277,618
Claims priority, application Denmark, Mar. 28, 1979, 269/79
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—37

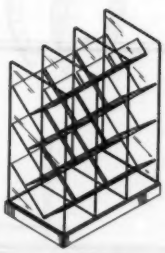
265,700
TOILET PAPER DISPENSER
Carl-Arne Breger, Malmö, and Per-Olof Landgren, Nacka, both of Sweden, assignors to Fiskeby Aktiebolag, Norrkoping, Sweden
Filed Aug. 5, 1980, Ser. No. 175,502
Claims priority, application Sweden, Feb. 6, 1980, 80-0265
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95



265,701
MODULAR WALL UNIT
Ross M. Colquhoun, 412 Richmond St. East, Toronto M5A 1P8, Ontario, Canada
Filed Feb. 13, 1980, Ser. No. 121,194
Claims priority, application Canada, Aug. 27, 1979, 2708796
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—164



265,702
SHEET DISPLAY UNIT
Nedim Savas, Wheaton, Md., assignor to Russell William, Ltd., Columbia, Md.
Filed Apr. 2, 1980, Ser. No. 136,463
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—189



265,703

ADJUSTABLE SHELF UNIT

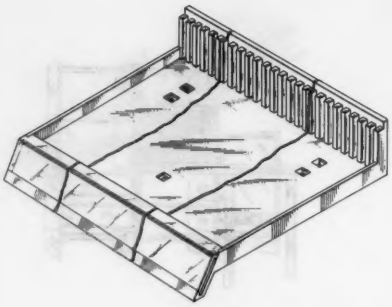
Marvin Zaro, New York, N.Y., assignor to Advertising Displays Company, Englewood, N.J.

Continuation-in-part of Ser. No. 7,744, Jan. 30, 1979, abandoned. This application Feb. 1, 1980, Ser. No. 117,672

Term of patent 14 years

Int. Cl. D6—*04*

U.S. Cl. D6—199



265,704

DOOR MAT BASE PLATE OR SIMILAR ARTICLE

Yosuke Yamamoto, Toyonaka; Takehisa Kinoyama, Suita, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Osaka, Japan

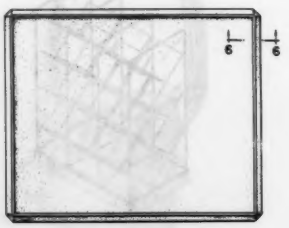
Filed May 8, 1980, Ser. No. 147,719

Claims priority, application Japan, Dec. 13, 1979, 54-52171

Term of patent 14 years

Int. Cl. D6—*11*

U.S. Cl. D6—209



265,705

DOOR MAT BASE PLATE OR SIMILAR ARTICLE

Ken Yamazaki, Kobe; Yosuke Yamamoto, Toyonaka; Takehisa Kinoyama, Suita, and Kinichi Sasagawa, Takatsuki, all of Japan, assignors to Duskin Franchise Kabushiki Kaisha, Oyodo-Osaka, Japan

Filed Aug. 11, 1980, Ser. No. 176,964

Claims priority, application Japan, Feb. 14, 1980, 55-5080

Term of patent 14 years

Int. Cl. D6—*11*

U.S. Cl. D6—219

265,706

DISPLAY FRAME

Thomas L. Heithaus, 200 Pemberwick Rd., Greenwich, Conn. 06830

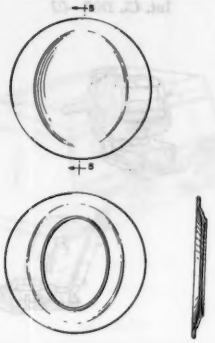
Filed Nov. 1, 1979, Ser. No. 90,445

Term of patent 14 years

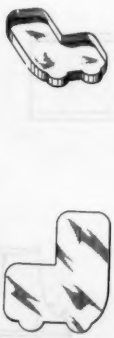
Int. Cl. D6—*07*

U.S. Cl. D6—234

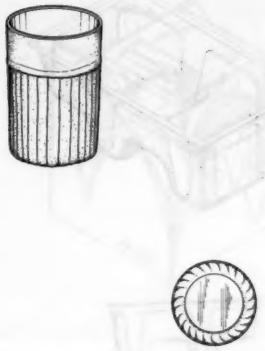
265,707
PLATE HAVING AN OVAL CENTER
Henry A. Pickard, Kenilworth, Ill., assignor to Pickard Incorporated, Antioch, Ill.
Filed Nov. 13, 1980, Ser. No. 206,458
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23



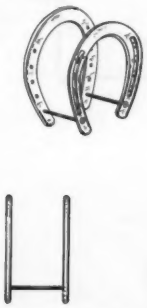
265,708
CAKE PAN
Dorothy O'Dell, 10932 Jean St., Anaheim, Calif. 92804
Filed Sep. 19, 1980, Ser. No. 188,622
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—43



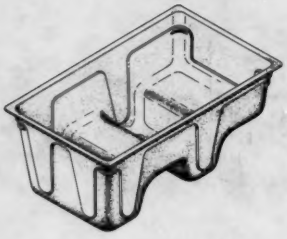
265,709
WINE BUCKET IN FORM OF A CHEF'S HAT
Paul Bocuse, Collonges Au Mont D Or, Quai de la Plage -n° 50, Rhone, France
Filed Jun. 20, 1980, Ser. No. 161,223
Claims priority, application France, Dec. 21, 1979, 315
Term of patent 14 years
Int. Cl. D07—*01, 06*
U.S. Cl. D7—70

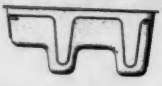


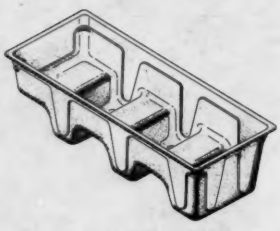
265,710
NAPKIN HOLDER
Peter Stein, 47 Stager St., Nutley, N.J. 07110
Filed Oct. 16, 1978, Ser. No. 952,529
Term of patent 7 years
Int. Cl. D07—*06*
U.S. Cl. D7—72



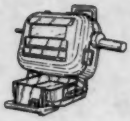
265,711
CONTAINER FOR FREEZING AND STORING FOOD PRODUCTS
Walter J. Dunden, Eugene, Oreg., assignor to Chef Francisco, Inc., Eugene, Oreg.
Filed Oct. 29, 1980, Ser. No. 201,717
Term of patent 14 years
Int. Cl. D07—*07*; D15—*07*
U.S. Cl. D7—76



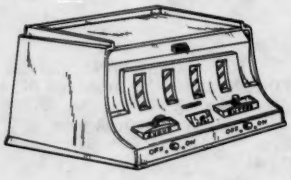




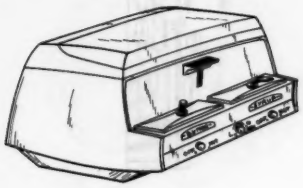
265,712
GRILL
Rudolf Maass, Solingen, Fed. Rep. of Germany, assignor to Robert Krups Stiftung & Co. AG, Solingen, Fed. Rep. of Germany
Division of Ser. No. 872,796, Jan. 27, 1978, abandoned. This application Jan. 30, 1980, Ser. No. 116,807
Claims priority, application Fed. Rep. of Germany, Aug. 8, 1977, 5 MR 811
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—88



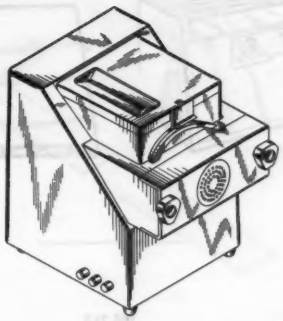
265,713
TOASTER UNIT
Eugene C. Schmidli, 136 Avery, Mt. Clemens, Mich. 48043
Filed Jul. 14, 1980, Ser. No. 168,092
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—91

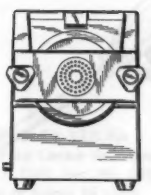


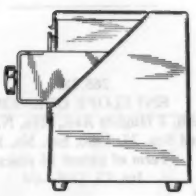
265,714
TOASTER
Eugene C. Schmidli, 136 Avery, Mt. Clemens, Mich. 48043
Filed Jul. 10, 1980, Ser. No. 168,440
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—91



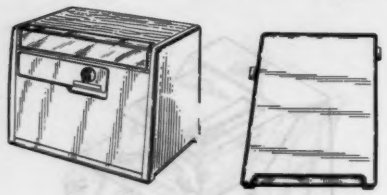
265,715
KITCHEN APPLIANCE FOR MAKING FARINACEOUS PRODUCTS
Harold Osrow, Dix Hills; Armando A. Araujo, Jr., Freeport, and Gordon R. Perry, New York, all of N.Y., assignors to Osrow Products Corporation, Old Bethpage, N.Y.
Filed Sep. 5, 1980, Ser. No. 184,350
Term of patent 14 years
Int. Cl. D07—*04;* D15—*08*
U.S. Cl. D7—153





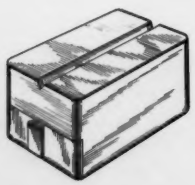


265,716
FOOD PROCESSOR
Donald E. Necas, Stevensville, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 3, 1980, Ser. No. 203,711
Term of patent 14 years
Int. Cl. D07—*04*
U.S. Cl. D7—153



265,717
LOG LIFTER
David J. Weisgerber, Gresham, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.
Filed Aug. 4, 1980, Ser. No. 174,902
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—210

265,718
ENVELOPE OPENER
Oscar W. Stoeckli, 2 Hughes Ave., Rye, N.Y. 10580
Filed Sep. 24, 1980, Ser. No. 190,489
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D8—61



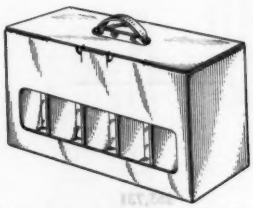
265,719
OUTDOORSMAN'S KNIFE
Lloyd F. Dowdy, 92476 Pioch La., Springfield, Oreg. 97477
Filed Jun. 26, 1980, Ser. No. 163,169
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99

265,720
SHIELD FOR THE BOLT OF A DOOR LOCK
James D. Harrison, 623 Del Paso, Apt. #156, Euless, Tex. 76039
Filed Jul. 14, 1980, Ser. No. 168,175
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—346

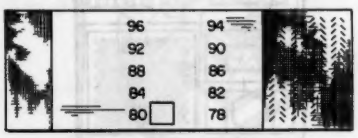
265,721
CARRYING ARM
Lennart Emgard, and Christer Löfqvist, both of Helsingborg, Sweden, assignors to Frigoscandia Contracting AB, Sweden
Filed Jun. 18, 1980, Ser. No. 160,712
Claims priority, application Sweden, Dec. 21, 1979, 79-2805
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—363

265,722
INSULATION PANEL DISPENSING BAG
Thomas G. Pace, Box 74, Bagley, Wis. 53801
Filed Jun. 4, 1980, Ser. No. 156,492
Term of patent 14 years
Int. Cl. D9—*05*
U.S. Cl. D9—305

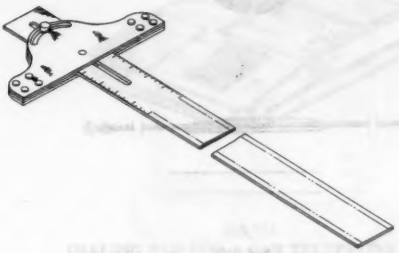
265,723
CARRYING CASE
Steven Rosenthal, Armonk, N.Y., assignor to Jonas Tobacco Corp., Great Neck, N.Y.
Filed Jul. 3, 1980, Ser. No. 165,600
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—346



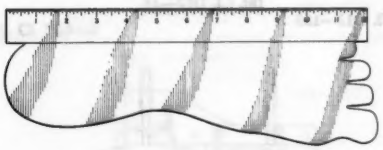
265,724
THERMOCHROMIC FINGER THERMOMETER
Kailash C. Khemka, Indianapolis, Ind., assignor to Bio-Temp Products, Inc., Indianapolis, Ind.
Filed Apr. 17, 1980, Ser. No. 140,458
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57



265,725
PITCH AND ANGLE SQUARE
Jerry L. Ingram, 7029 Holland Ave., Citrus Heights, Calif. 95610
Filed Jun. 9, 1980, Ser. No. 157,967
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65

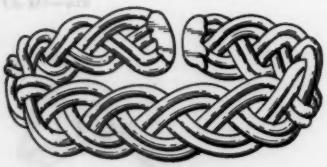


265,726
NOVELTY RULER
Joseph R. Farrell, 2601 Park Center Dr., Alexandria, Va. 22302
Filed Jul. 1, 1980, Ser. No. 165,204
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—71

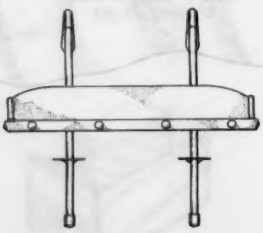


265,727
DIAMOND NECKLACE
Josef J. Barr, 125 Worth Ave., Palm Beach, Fla. 33480
Filed May 8, 1980, Ser. No. 148,192
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—6

265,728
RING OR THE LIKE
Lewis C. Bales, P.O. Box 182, Cloverdale, Ind. 46120
Filed Mar. 24, 1980, Ser. No. 132,856
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—27

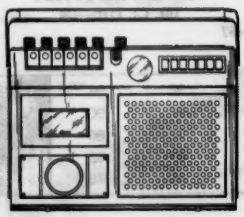


265,729
ADJUSTABLE ARM REST FOR AUTOMOBILES
Franz N. Rexrost, 229 E. Minnesota, Indianapolis, Ind. 46225
Filed Jun. 30, 1980, Ser. No. 164,152
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—155

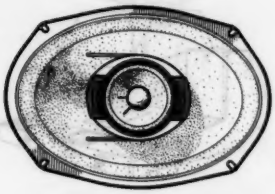


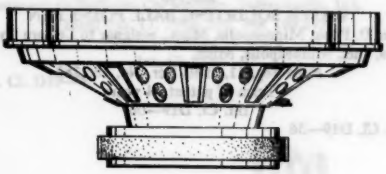
265,730
DIALING PAD
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Nov. 13, 1979, Ser. No. 93,174
Claims priority, application Japan, May 21, 1979, 54-020289
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66

265,731
COMBINED CASSETTE RECORDER AND CLOCK RADIO
Yiu C. Mino, Kowloon, Hong Kong, assignor to Mino Corporation, Hong Kong, Hong Kong
Filed Aug. 27, 1979, Ser. No. 69,786
Claims priority, application United Kingdom, Feb. 26, 1979, 988721
Term of patent 14 years
Int. Cl. D14—*01, 03 E;* D10—*01*
U.S. Cl. D14—5



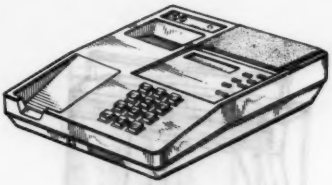
265,732
LOUDSPEAKER
Takekazu Iijima, Tokyo, Japan, assignor to Pioneer Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1980, Ser. No. 184,234
Claims priority, application Japan, Apr. 21, 1980, 55-15712
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—30





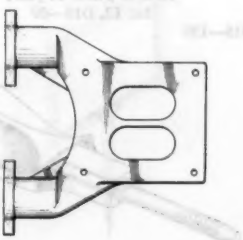
265,733
TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Apr. 28, 1980, Ser. No. 144,283
Claims priority, application Japan, Nov. 8, 1979, 54-46618
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

265,734
TELEPHONE SET BASE
John A. Mahan, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Dec. 8, 1980, Ser. No. 213,858
Claims priority, application Canada, Oct. 22, 1980, 47728
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60



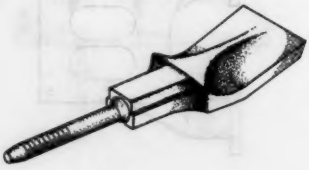
265,735
DIALING PAD FOR A CAR TELEPHONE SET
Hisao Fukushima, and Junji Hirooka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,832
Claims priority, application Japan, Dec. 28, 1979, 54-055050
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—66

265,736
INTAKE MANIFOLD
Anthony J. Pappas, Indianapolis, Ind., assignor to AJP International, Indianapolis, Ind.
Filed Jun. 20, 1980, Ser. No. 161,290
Term of patent 14 years
Int. Cl. D15—*1*
U.S. Cl. D15—5

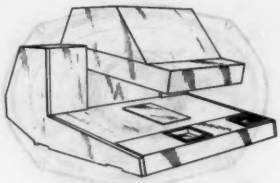


265,737
SEWING MACHINE
Nobufusa Kuroki, Koganei, Japan, assignor to Janome Sewing Machine Co. Ltd., Tokyo, Japan
Filed May 19, 1980, Ser. No. 151,105
Claims priority, application Japan, Feb. 22, 1980, 55-6129
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—70

265,738
CUTTER TOOTH
Geoffrey A. Williames, 337 Normanby St., Warragul, Victoria, Australia (3820)
Filed May 23, 1980, Ser. No. 152,687
Claims priority, application Australia, Dec. 23, 1979, 79649
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D15—139



265,739
MICRO FILM CAMERA
Masahiro Koyama; Kosuke Miki, both of Kawasaki, and Masahiko Suzuki, Sagamihara, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jun. 13, 1980, Ser. No. 159,278
Claims priority, application Japan, Dec. 28, 1979, 54-55029
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D16—2



265,740
WATER SQUIRTING BALL POINT PEN
Peter D. Pook, Minneapolis, Minn., assignor to Leisure Dynamics, Inc., Minneapolis, Minn.
Filed Sep. 11, 1980, Ser. No. 186,282
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—36

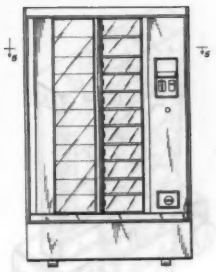
265,741
FELT PEN
Tatsuro Funahashi, Komaki, Japan, assignor to Shachihata Industrial Co., Ltd., Aichi, Japan
Filed Nov. 14, 1980, Ser. No. 206,977
Claims priority, application Japan, May 15, 1980, 55-19091
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—49

265,742
PAPER HOLDER
Victor H. Wilcox, 1526 Westover Ave. SW., Roanoke, Va. 24015
Continuation-in-part of Ser. No. 31,696, Apr. 20, 1979, abandoned. This application Jul. 7, 1980, Ser. No. 166,240
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—86

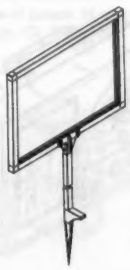
265,743
HANGING FILE RACK
Stephen T. Meyer, and C. Rodger Meyer, both of Carmel, Ind., assignors to Deflecto Corporation, Indianapolis, Ind.
Filed Jul. 17, 1980, Ser. No. 169,879
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—90

265,744
REINFORCEMENT TAB
Steven J. Kristof, 6757 Eastridge-#3047, Dallas, Tex. 75231
Filed Jun. 23, 1980, Ser. No. 161,854
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—100

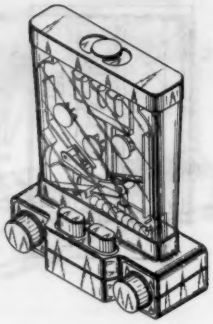
265,745
MERCHANDISING MACHINE
Merrill Krakauer, 1 Deer Path, Short Hills, N.J. 07078
Filed May 16, 1980, Ser. No. 150,346
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D20—4



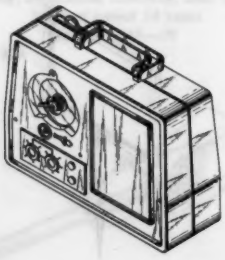
265,746
SIGN FRAME
Richard P. Robillard, 2101 Shoreline Dr. #252, Alameda, Calif. 94501
Filed May 28, 1980, Ser. No. 154,008
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—41



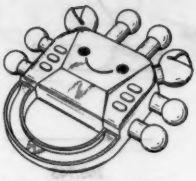
265,747
VERTICAL PINBALL-TYPE GAME HOUSING
Hiromi Takahashi, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan
Filed May 27, 1980, Ser. No. 153,719
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—12



265,748
TOY MEDICAL KIT
Toshinori Tabata, Tokyo, Japan, assignor to Tomy Kogyo Company, Inc., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,239
Claims priority, application Japan, Dec. 20, 1979, 54-53515
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

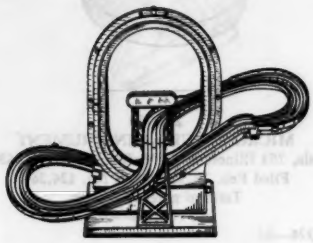


265,749
TOY RATTLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Masako Mizugami, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Apr. 24, 1980, Ser. No. 143,255
Claims priority, application Japan, Nov. 19, 1979, 54-48468
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—65



265,750
TOY VANITY
Henry Orenstein, 136 Lakeside Ave., Verona, N.J. 07044
Filed Jun. 13, 1980, Ser. No. 159,043
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D21—121

265,751
TOY VEHICLE TRACK
Yoshio Udagawa, Tokyo, Japan, assignor to Blue Box Toy Factory Limited, Hong Kong
Filed Mar. 6, 1980, Ser. No. 127,623
Claims priority, application United Kingdom, Sep. 10, 1979, 991490
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—143



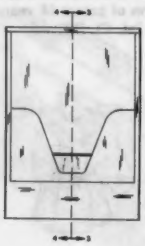
265,752
DOLL
Diane F. Miller Stoll, Roselle, and Jo Anne Kaczmarek, Carpentersville, both of Ill., assignors to Chimney Sweeps of America, Ltd., Medinah, Ill.
Filed Sep. 5, 1980, Ser. No. 184,626
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171

265,753
DOLL
Ruth Kleinpeter, and Evelyn Kirk, both of Baton Rouge, La., assignors to Punters Club, Inc., Baton Rouge, La.
Filed Aug. 18, 1980, Ser. No. 178,956
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177

265,754
TOY FIGURE
George W. Lucas, Jr., San Anselmo; Ralph McQuarrie, Berkeley; Joseph E. Johnston, Fairfax, all of Calif., and Stuart Freeborn, Esher, England, assignors to Lucasfilm, Ltd., San Rafael, Calif.
Filed Apr. 18, 1980, Ser. No. 141,597
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—180

265,755
ANIMAL HEAD
Kathryn A. Haines, 82 Millside Dr., Milton, Ontario, Canada (L9T 4A1), and Barbara A. Haines, 95 Main St., Milton, Ontario, Canada (L9T 1N4)
Filed Jul. 21, 1980, Ser. No. 170,944
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—188

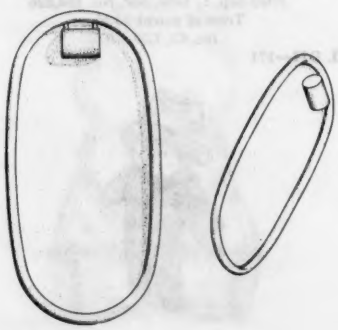
265,756
COMBINED BATHTUB AND SHOWER ENCLOSURE
James H. Ballard, 513 Bexar Ave., Hamilton, Ala. 35570
Filed Sep. 8, 1980, Ser. No. 185,362
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



265,757
CONTACT LENS STERILIZER HOUSING
Michael D. Thomas, and Francis E. Ryder, both of Arab, Ala., assignors to Ryder International Corporation, Arab, Ala.
Filed Jun. 12, 1980, Ser. No. 158,941
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9

265,758
MICRO SURGICAL INSTRUMENT
Mark Beale, 751 Illinois Ave., McDonald, Ohio 44437
Filed Feb. 25, 1980, Ser. No. 124,267
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—26

265,759
TANNING POOL
Bettie L. Weber, 9605 E. 950 N., Brownsburg, Ind. 46112
Filed May 9, 1980, Ser. No. 148,199
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—39



265,760
URINE COLLECTION DEVICE OR THE LIKE
Charles A. Lahay, Fayette, Ala., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 19, 1980, Ser. No. 131,603
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—59

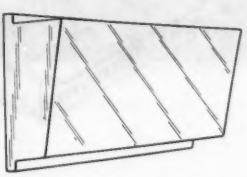
265,761
RESTAURANT BUILDING
Louis J. Jenn, and Joseph J. Cerola, both of Indianapolis, Ind., assignors to Atrium Structures, Inc., Indianapolis, Ind.
Filed Aug. 21, 1980, Ser. No. 180,156
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17

265,762
COMBINATION FLASHLIGHT AND SPANNER WRENCH
Johnnie R. Gibbon, Jr., 1221 NW. 104, Oklahoma City, Okla. 73114
Filed Oct. 6, 1980, Ser. No. 194,162
Term of patent 14 years
Int. Cl. D26—*02;* D8—*05*
U.S. Cl. D26—38

265,763
PORTABLE FLOODLIGHT
Douglas G. K. Franks, 6926 N. Kimberly Dr., Peoria, Ill. 61614
Filed Jan. 7, 1980, Ser. No. 110,334
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—64

265,764
PORTABLE FLOODLIGHT
Douglas G. K. Franks, 6926 N. Kimberly Dr., Peoria, Ill. 61614
Filed Jan. 7, 1980, Ser. No. 110,335
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—64

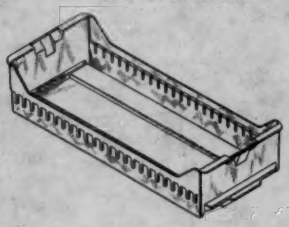
265,765
LUMINAIRE OR SIMILAR ARTICLE
Kenneth R. Hawkins, 1190 S. River Rd., Gurnee, Ill. 60031
Filed May 5, 1980, Ser. No. 146,708
Term of patent 7 years
Int. Cl. D26—*05;* D20—*03*
U.S. Cl. D26—85



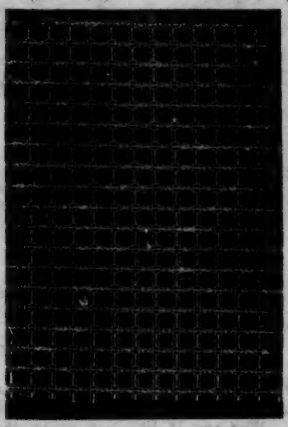
265,766
PIPE
Robert B. Sher, 609 Lochmor, Danville, Calif. 94526
Filed Mar. 31, 1981, Ser. No. 249,623
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D27—03

265,767
DRYER
James B. Stewart, Randolph, N.J., and John Almond, London, England, assignors to Clairol Incorporated, New York, N.Y.
Filed Aug. 13, 1980, Ser. No. 178,221
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13

265,768
DOCUMENT TRAY
Eugene W. Howley, 2789 Dunbarton Dr., NW., Canton, Ohio 44708
Filed Jul. 10, 1980, Ser. No. 168,387
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D34—40

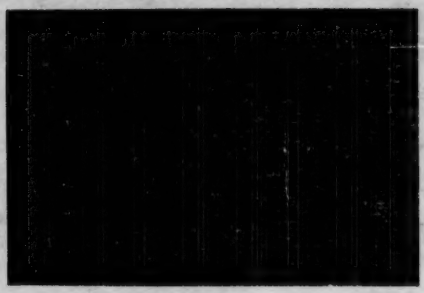


265,769
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,486
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



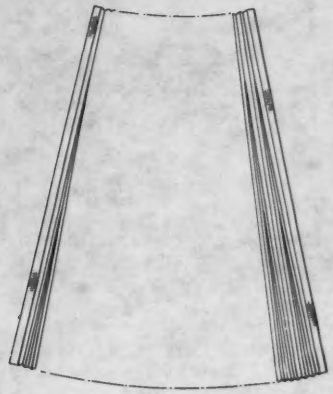
265,770
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,487
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E

265,771
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,509
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



265,772
CURTAIN MATERIAL
Hans Stöcker, Wil, Switzerland, assignor to Gardisette International AG, Lucerne, Switzerland
Filed May 1, 1980, Ser. No. 145,789
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1979, URA 1193/79
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E

265,773
SKIRT FABRIC OR SIMILAR ARTICLE
Miguel Vidal, 601 W. 160th St., New York, N.Y. 10032
Filed Dec. 26, 1979, Ser. No. 106,743
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 R



265,774
CAMOUFLAGE FABRIC OR SIMILAR ARTICLE
James H. Crumley, Arlington, Va., assignor to Bowing Enterprises, Arlington, Va.
Filed Jun. 25, 1980, Ser. No. 162,926
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 R

PAGES 727 THROUGH 736 ARE MISSING IN
NUMBER ONLY.

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Munson, Harry R., Jr.; and Alphin, Reevis S., 4,343,804, Cl. 424-258.000.

A. O. Smith-Inland, Inc.: *See*—
Johnson, Junior L.; and Pikey, Leonard E., 4,343,843, Cl. 428-36.000.

A/S Akers Mek. Verksted: *See*—
Almeland, Inge-Bertin; and Lefranc, Marc, 4,343,562, Cl. 403-171.000.

A/S Norsk Viftefabrikk: *See*—
Bockman, Ole K.; and Rydland, Kjell, 4,343,352, Cl. 165-104.160.

Aaland, Kristian: *See*—
Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, 4,343,223, Cl. 89-8.000.

Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., to Minnesota Mining and Manufacturing Company. Fixing of tetra (hydrocarbyl) borate salt imaging systems. 4,343,891, Cl. 430-337.000.

AB Volvo: *See*—
Lundstrom, Gustaf B., 4,343,230, Cl. 98-2.050.

Abbey, Kirk J., to SCM Corporation. Polyspirolactone polymers. 4,343,915, Cl. 523-414.000.

Abbott, David D., to Exxon Research & Engineering Co. Chemical print element. 4,343,555, Cl. 400-144.200.

Abe, Akira: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.

Abe, Kenzo, to Asahi Glass Company, Ltd. Quenching apparatus for tempering curved glass plates. 4,343,645, Cl. 65-348.000.

Abe, Ryoji: *See*—
Hataishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, 4,343,080, Cl. 29-571.000.

Abel, Heinz; and Schafer, Paul, to Ciba-Geigy Corporation. Propylene oxide polyadducts containing carboxyl groups and their salts. 4,343,620, Cl. 8-557.000.

Abraamov, Evgenij: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, to Daimler-Benz Aktiengesellschaft. Soot filter in the exhaust gas stream of air-compressing internal combustion engines. 4,343,149, Cl. 60-311.000.

Abu Aktiebolag: *See*—
Andersson, Jan-Ake, 4,343,442, Cl. 242-84.20A.

Achmatov, Igol: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Acker, Rolf-Dieter: *See*—
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,343,648, Cl. 71-91.000.

Adams, James H.; Rich, Dennis J.; and Holtz, Frederick C., Jr., to Valeron Corporation, The. High toughness ceramic cutting tool. 4,343,909, Cl. 501-98.000.

Adamson, Jerome E. Safety ski pole grip. 4,343,490, Cl. 280-821.000.

Addare Corp.: *See*—
Emmert, Joseph W.; and Sweeney, Lawrence J., 4,343,394, Cl. 198-616.000.

Aden, Michael L., to Ingersoll-Rand Company. Cutter bit assembly. 4,343,516, Cl. 299-86.000.

Advanced Machine Design Company: *See*—
Moelbert, Heinrich, 4,343,209, Cl. 83-16.000.

AES Technology Systems, Inc.: *See*—
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,343,392, Cl. 198-484.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Julia, Marc; and Saussine, Lucien, 4,343,952, Cl. 568-28.000.

AGFA-Gevaert AG: *See*—
Cocron, Istvan, 4,344,024, Cl. 318-640.000.

Agfa-Gevaert Aktiengesellschaft: *See*—
Dabringhaus, Wilfried; Glotzbach, Helmut; and Voss, Karl, 4,343,422, Cl. 226-197.000.

Agri-Bio Corporation: *See*—
DuBose, Ronald A.; and Woolsey, William D., 4,343,309, Cl. 128-303.140.
DuBose, Ronald A.; and Woolsey, William D., 4,343,310, Cl. 128-303.140.

Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, to Sumitomo Chemical Company, Limited. 1,2,4-Triazine derivatives, and their production and use. 4,343,801, Cl. 424-249.000.

Aho, Yrjo, to Exel Oy. Snow disk for a ski stick. 4,343,491, Cl. 280-824.000.

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Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,343,167, Cl. 72-8.000.

Aidlin Automation, Inc.: *See*—
Aidlin, Stephen H.; and Tartokowsky, Michael, 4,343,587, Cl. 414-568.000.

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Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,133, Cl. 53-431.000.
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Ajinomoto Company Incorporated: *See*—
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.

Akabane, Yukihiro; Satoh, Hisashi; Shiraiwa, Yukio; and Tsuchiya, Shuyou, to Nippon Seiko Kabushiki Kaisha. Ball bearing. 4,343,521, Cl. 308-193.000.

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Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.

Aketa, Kohichi: *See*—
Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, 4,343,953, Cl. 568-347.000.

Akiba, Tokuji: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.

Akiyama, Nobuyuki: *See*—
Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, 4,343,553, Cl. 356-376.000.

Akiyama, Toru, to Universal Pioneer Corporation. Method and system for a disc player tracking servo. 4,344,165, Cl. 369-44.000.

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Bergling, Gunnar, 4,343,055, Cl. 441-3.000.
Hallerback, Stig L., 4,343,565, Cl. 403-370.000.

AKZO NV: *See*—
Groen, Marinus B., 4,343,796, Cl. 424-184.000.
Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, 4,343,602, Cl. 4! 8-77.000.

Akzona Incorporated: *See*—
Wolters, Gerrit; and Kuypers, Leonardus P. C., 4,343,896, Cl. 435-7.000.

Alfa-Laval AB: *See*—
Wehling, Holger, 4,343,431, Cl. 233-20.00A.

Allart, Pierre J.; and Guillaume, Claude A., to Monsanto Europe S.A. Chromogen solutions for pressure-sensitive mark-recording systems. 4,343,652, Cl. 106-21.000.

Allen, Dan V. Spring type arm wrestling device. 4,343,465, Cl. 272-67.000.

Allen, David R. Apparatus having a variable attitude work implement. 4,343,142, Cl. 56-377.000.

Allen, Glenn R., to Heller, Roger A. Light switching mechanism. 4,344,071, Cl. 340-566.000.

Allen Group, The: *See*—
Scourtes, George, 4,343,348, Cl. 165-1.000.

Allibert, S.A.: *See*—
Faucillon, Michel, 4,343,400, Cl. 206-507.000.

Allied Corporation: *See*—
Francis, Philip L., 4,343,444, Cl. 242-107.40A.
Ocker, Klaus F.; Jodts, Richard J.; and Pfeiffer, Robert C., 4,343,445, Cl. 242-107.700.
Stephenson, Robert L., 4,343,488, Cl. 280-802.000.

Almeland, Inge-Bertin; and Lefranc, Marc, to A/S Akers Mek. Verksted. Joint for trusses. 4,343,562, Cl. 403-171.000.

Alphin, Reevis S.: *See*—
Munson, Harry R., Jr.; and Alphin, Reevis S., 4,343,804, Cl. 424-258.000.

Altra Corporation: *See*—
Anderson, George C., 4,343,450, Cl. 248-454.000.

Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus. Reversing attachment for diamond thread screw. 4,343,200, Cl. 74-57.000.

Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, to Commissariat a l'Energie Atomique. Collector for solar boiler with linear concentration. 4,343,298, Cl. 126-450.000.

Amdahl Corporation: *See—*
Chiang, Ping-Wang, 4,343,877, Cl. 430-5.000.
Chiang, Ping-Wang, 4,343,878, Cl. 430-5.000.

Amemiya, Akira: *See—*
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.

American Can Company: *See—*
Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., 4,343,174, Cl. 72-349.000.
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American Cyanamid Company: *See—*
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Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., 4,343,939, Cl. 544-165.000.
Pasarela, Nunzio R., 4,343,790, Cl. 424-81.000.
Sassiver, Martin L.; and Boothe, James H., 4,343,938, Cl. 544-27.000.

American Microsystems, Inc.: *See—*
Callahan, Kent R., 4,344,050, Cl. 333-173.000.

Ames, Adolf: *See—*
Wagner, Alfred; and Ames, Adolf, 4,343,425, Cl. 228-117.000.

Ametek, Inc.: *See—*
Daubman, Edward A.; and Owler, William G., Jr., 4,343,700, Cl. 210-232.000.

AMP Incorporated: *See—*
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., 4,343,524, Cl. 339-74.00R.
Lucius, John E.; and Ritchie, Leon T., 4,343,085, Cl. 29-866.000.
Lucius, John E.; and Ritchie, Leon T., 4,343,528, Cl. 339-198.00G.
Reavis, Robert P., Jr.; and Weisenburger, Lawrence P., 4,343,529, Cl. 339-198.00R.

AMSTED Industries Incorporated: *See—*
Parshall, David G., 4,343,701, Cl. 210-387.000.

Anand, Praveen: *See—*
Etzel, James E.; and Anand, Praveen, 4,343,706, Cl. 210-667.000.

Anastassiadis, Kristin: *See—*
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, 4,343,735, Cl. 260-112.00R.

Anders, Walter G., to Diebold, Incorporated. Pneumatic tube system customer terminal construction. 4,343,574, Cl. 406-13.000.

Anderson, Alan P.; and Jackson, John C., to Lambda Industrial Science Limited. Remote detector of flaws in surfaces using micro-waves. 4,344,030, Cl. 324-58.50B.

Anderson, George C., to Altra Corporation. Plate holder. 4,343,450, Cl. 248-454.000.

Anderson, Paul R.; Downs, Raymond L.; and Henderson, Timothy M., to United States of America, Energy. Method of manufacturing hollow members having uniform wall thickness through use of ablation. 4,343,675, Cl. 156-628.000.

Anderson, Tore N., to Litton Systems, Inc. Mode suppressor for circular waveguides utilizing a plurality of resistance cards. 4,344,053, Cl. 333-251.000.

Andersson, Jan-Ake, to Abu Aktiebolag. Arrangement in fishing reels for compensating for the line retrieval in relation to the brake force on line withdrawal. 4,343,442, Cl. 242-84.20A.

Anderton, Ronald V.; and Atwood, Donald S. Fire hydrant diffuser. 4,343,435, Cl. 239-499.000.

Ando, Shizuo: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.

Andrews Paper & Chemical Co., Inc.: *See—*
Muller, Peter; and Mustacchi, Henry, 4,343,884, Cl. 430-149.000.

Andrzejewski, Heinz: *See—*
Kruschwitz, Werner; and Andrzejewski, Heinz, 4,343,121, Cl. 52-208.000.

Angelica Corporation: *See—*
Zebell, Diane, 4,343,046, Cl. 2-105.000.

Anglin, James R.; Ryu, Yumi P.; and Singerman, Gary M., to Gulf Research & Development Company. Quaternary ammonium thiomolybdates. 4,343,746, Cl. 260-429.00R.

Anglin, James R.: *See—*
Ryu, Yumi P.; Singerman, Gary M.; and Anglin, James R., 4,343,747, Cl. 260-429.00R.

Anglo-American Clays Corporation: *See—*
Cook, Jerry A.; and Cobb, Gary L., 4,343,694, Cl. 209-9.000.

Anlauf, Jurgen, to Robert Bosch GmbH. Method and arrangement for testing the characteristics of inductive pulse generators. 4,344,032, Cl. 324-158.0MG.

Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with an attenuated superactive multimetallic catalytic composite for use therein. 4,343,724, Cl. 252-466.00B.

Aono, Shunji: *See—*
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.

Applied Power Inc.: *See—*
Junger, Eugene E., 4,343,328, Cl. 137-491.000.

Aqua-Chem, Inc.: *See—*
Chronowski, Robert A., 4,343,247, Cl. 110-245.000.
Schimbke, Paul A.; and Williams, Stanley A., 4,343,987, Cl. 219-287.000.

Arai, Yasuyuki: *See—*
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.

Argo Engineering Ltd.: *See—*
Loblick, Norton M., 4,343,058, Cl. 14-71.700.

Arimura, Hirofumi: *See—*
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.

Arita, Takemi, to Nippon Telegraph & Telephone Public Corporation. Time division switching circuit with time slot interchange. 4,344,170, Cl. 370-68.000.

Armandillo, Errico: *See—*
Spalding, Ian J.; Selden, Adrian C.; and Armandillo, Errico, 4,344,174, Cl. 372-91.000.

Armentrout, David N.: *See—*
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.

Armstrong, John L., to Burroughs Corporation. Sensor retaining system. 4,343,451, Cl. 248-500.000.

Armstrong World Industries, Inc.: *See—*
Lenox, Ronald S.; and Schwartz, Anne L., 4,343,923, Cl. 525-426.000.

Arthur, W. Eugene: *See—*
Sarver, Robert B.; and Arthur, W. Eugene, 4,343,567, Cl. 404-10.000.

Aruga, Masayoshi: *See—*
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.

Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, to Hitachi, Ltd. Data processor system capable of providing both a computer mode and a sequencer mode of operation. 4,344,129, Cl. 364-200.000.

Asahi-Dow Limited: *See—*
Hoki, Tsuneo; and Matsuki, Yutaka, 4,343,911, Cl. 521-88.000.
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.
Watanabe, Seizaburo; and Matsuki, Yutaka, 4,343,913, Cl. 521-94.000.

Asahi Glass Company, Ltd.: *See—*
Abe, Kenzo, 4,343,645, Cl. 65-348.000.

Asano, Masaharu, to Nissan Motor Co., Ltd. Control device for an internal combustion engine. 4,343,278, Cl. 123-425.000.

Ashland Oil, Inc.: *See—*
Blegen, James R., 4,343,839, Cl. 427-340.000.
Linden, Gary L., 4,343,924, Cl. 525-440.000.

Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., to Interco Incorporated. Tensionless fabric feeding apparatus. 4,343,421, Cl. 226-113.000.

Astero, Ulf J. E., to Asthausbolagen HB Astero & Stockhaus. Projector. 4,343,538, Cl. 353-64.000.

Asthausbolagen HB Astero & Stockhaus: *See—*
Astero, Ulf J. E., 4,343,538, Cl. 353-64.000.

Astoin, Jacques N.: *See—*
Massot, Jacqueline O.; and Astoin, Jacques N., 4,343,784, Cl. 424-45.000.

Astrom, Gota L.; and Johansson, Sigvard N. Utility pole hardness tester. 4,343,179, Cl. 73-81.000.

Atherton, James H.: *See—*
Harmon, Joseph W.; and Atherton, James H., 4,344,003, Cl. 307-296.00A.

Atlantic Richfield Company: *See—*
Gay, Charles F., 4,343,662, Cl. 148-187.000.

Atleliers de la Motobecane: *See—*
Jaulmes, Christian, 4,343,184, Cl. 73-299.000.

Atwood, Donald S.: *See—*
Anderton, Ronald V.; and Atwood, Donald S., 4,343,435, Cl. 239-499.000.

Bacconnet, Eugene: *See—*
Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, 4,343,298, Cl. 126-450.000.

Bachovchin, Dennis M., to United States of America, Energy. Nuclear reactor control column. 4,343,764, Cl. 376-338.000.

Baecklund, Nils J. Method and apparatus for measuring the content or quantity of a given element by means of X-ray radiation. 4,344,181, Cl. 378-45.000.

Bahnfleth, William A., to Caterpillar Tractor Co. Beveled lobe anti-skid grating. 4,343,119, Cl. 52-180.000.

Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., to UOP Inc. Method of making a catalytic converter. 4,343,074, Cl. 29-157.00R.

Bailey, Dale A.: *See—*
Nees, John; and Bailey, Dale A., 4,343,872, Cl. 429-245.000.

Baines, Eric; and Carr, John F., to Colgate-Palmolive Company. Dentifrices containing alpha-alumina trihydrate. 4,343,786, Cl. 424-52.000.

Baker, Francis S., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Preparation of a surface for adhesive bonding. 4,343,838, Cl. 427-292.000.

Baker, Rees T. K.; and Chludzinski, James J., to Exxon Research & Engineering Co. Inhibition of carbon accumulation on metal surfaces. 4,343,658, Cl. 148-6.300.

Baker, William, III; Garner, Lloyd L.; and Harris, Charles R., to Smith International, Inc. Hybrid rock bit. 4,343,371, Cl. 175-329.000.
Baker, William E. Fluid pressure indicating apparatus. 4,343,188, Cl. 73-706.000.
Bako, Lazlo, to Presto Lock, Inc. Combination locks. 4,343,164, Cl. 70-312.000.
Bako, Lazlo, to Presto Lock, Inc. Combination locks. 4,343,165, Cl. 70-312.000.
Bako, Lazlo: *See*—
Scelba, Stephen S.; and Bako, Lazlo, 4,343,163, Cl. 70-312.000.
Baldwin Piano & Organ Company: *See*—
Uetrecht, Dale M., 4,343,219, Cl. 84-1.240.
Balfour Lumber Company: *See*—
Coleman, Cecil A., 4,343,607, Cl. 432-18.000.
Ball Corporation: *See*—
Scholes, Addison B., 4,343,641, Cl. 65-60.200.
Ballato, Arthur D.: *See*—
Vig, John R.; and Ballato, Arthur D., 4,344,010, Cl. 310-361.000.
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, to Commissariate a l'Energie Atomique. Apparatus for mining nodules beneath the sea. 4,343,098, Cl. 37-54.000.
Ballinger, Dale O., to Honeywell Inc. Ultrasonic transducer. 4,344,159, Cl. 367-87.000.
Baltek Corporation: *See*—
Kohn, Henri A., 4,343,846, Cl. 428-138.000.
Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten: *See*—
Winkler, Otto, 4,343,455, Cl. 251-58.000.
Bank, Mikhail U.; Prozorov, Valery I.; and Rubichev, Nikolai A. Testing device for low-frequency amplifiers. 4,344,028, Cl. 324-57.00N.
Banner, John G.: *See*—
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.
Barbini, Spartacus; and Jolion, Michel, to Electricite de France (Service National). Device for rapid defreezing of frozen or deep-frozen products. 4,343,979, Cl. 219-10.55A.
Bares, Jan; and Maher, James C., to Xerox Corporation. Control system for regulating the concentration of toner particles within a developer mixture. 4,343,548, Cl. 355-3.0DD.
Barmag Barmer Maschinenfabrik: *See*—
Bremer, C. Hermann, 4,343,378, Cl. 184-6.260.
Barnes, Burris P. Load brace stabilizing assembly. 4,343,578, Cl. 410-151.000.
Barnes, George H., to Burroughs Corporation. Partitionable parallel processor. 4,344,134, Cl. 364-200.000.
Barro, Giovanni, to Officine Savio S.p.A. Rotating ring. 4,343,145, Cl. 57-124.000.
Barrows, Thomas H., to Minnesota Mining and Manufacturing Company. Synthetic absorbable surgical devices of poly(esteramides). 4,343,931, Cl. 528-291.000.
Bartok, William: *See*—
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., 4,343,606, Cl. 431-10.000.
Base, Leonard C. Wood toter. 4,343,483, Cl. 280-47.260.
BASF Aktiengesellschaft: *See*—
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,343,648, Cl. 71-91.000.
BASF Wyandotte Corporation: *See*—
Schmolka, Irving R., 4,343,785, Cl. 424-49.000.
Basford, James A.; Mathis, John E.; and Wright, Harlan C., to United States of America, Energy. Long-life leak standard assembly. 4,343,176, Cl. 73-1.00G.
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., to National Research Development Corporation. Method and apparatus for shearing metal billets. 4,343,208, Cl. 83-13.000.
Basrai, Habil S.: *See*—
Rajagopal, Ganesh; and Basrai, Habil S., 4,343,365, Cl. 172-4.000.
Batt, Richard A., to Trico Products Corporation. Windshield wiper assembly. 4,343,063, Cl. 15-250.420.
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, to Societe Nationale Elf Aquitaine. Process for the purification of residual industrial gases containing small quantities of sulfur compounds. 4,343,778, Cl. 423-228.000.
Bauer, Fritz, to Suspa Federungstechnik Fritz Bauer & Shone Ohg. Spring support strut for drum-type washing machine. 4,343,452, Cl. 248-565.000.
Bauer Kaba AG.: *See*—
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Baumgartner, August, to Zellweger, Ltd. Binding for fiber bundles, a method for the production of the binding and an apparatus for carrying out the method. 4,343,143, Cl. 57-22.000.
Baur, Karl: *See*—
Dannhorn, Erich; and Baur, Karl, 4,343,777, Cl. 423-228.000.
Baur, Paul S., Jr. Suture and prosthesis material. 4,343,617, Cl. 8-127.600.
Bayer Aktiengesellschaft: *See*—
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,343,936, Cl. 542-417.000.
Muschelknautz, Edgar; and Rink, Norbert, 4,343,639, Cl. 65-4.400.
Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, 4,343,339, Cl. 152-209.00R.
Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, 4,343,756, Cl. 264-216.000.
BBC Brown, Boveri & Company, Ltd.: *See*—
Bischofberger, Walter; and Zeller, Norbert, 4,343,972, Cl. 200-81.00R.
Schwarzenbach, Alfred, 4,343,569, Cl. 405-53.000.
Spickenreuther, Dieter, 4,343,875, Cl. 430-5.000.
Beach, Bradley L.; Gates, Paul D.; and Schum, Vaughn J., Jr., to International Business Machines Corporation. Completely oxidized Sulfur Black 1 for ink. 4,343,653, Cl. 106-22.000.
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, to Boehringer Mannheim GmbH. Process for obtaining cholesterol esterase from micro-organisms. 4,343,903, Cl. 435-197.000.
Beauchet, Jean, to Societe Nouvelle de Roulements. Method of manufacturing composite rings for bearings. 4,343,072, Cl. 29-149.5DP.
Becker, Bernard: *See*—
Podos, Steven; Krupin, Theodore; and Becker, Bernard, 4,343,794, Cl. 424-131.000.
Becker, Harold L.; and Burika, Rudolf S., to Petrolite Corporation. Water-in-oil emulsions of polymers of quaternary ammonium compounds of the acrylamido type. 4,343,730, Cl. 524-551.000.
Becker, Richard J.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Beecham Group Limited: *See*—
Harbridge, John B., 4,343,806, Cl. 424-272.000.
Stirling, Irene; and Clarke, Brian P., 4,343,807, Cl. 424-272.000.
Beene, Gerald W., to Reliance Electric Company. Subscriber drop circuit for controlling drop current with load and maximizing power usage. 4,343,971, Cl. 179-70.000.
Beggs, James H., to Robertshaw Controls Company. Noise trap arrangement for AC power line communication systems. 4,344,066, Cl. 340-310.00A.
Belavich, Joseph E.: *See*—
Bostic, John S., 4,344,182, Cl. 378-170.000.
Belenguer, Frank J. Guideway for continuous welded rail. 4,343,432, Cl. 238-2.000.
Belisomi, Pietro; and Farina, Attilio, to Indesit Industria Elettrodomestici Italiana S.p.A. Television set with picture-storage means. 4,344,090, Cl. 358-183.000.
Belke, William H.; and Grim, George B., to Caterpillar Tractor Co. Rotating fluidized bed hydrogen production system. 4,343,624, Cl. 48-61.000.
Bell Telephone Laboratories, Incorporated: *See*—
Cummiskey, Peter, 4,344,180, Cl. 375-116.000.
Dutt, Bulusu V.; Keramidas, Vassilis G.; and Temkin, Henryk, 4,343,674, Cl. 156-601.000.
Heller, Adam; Lewerenz, Hans J.; and Miller, Barry, 4,343,870, Cl. 429-111.000.
Heller, Adam; and Vadimsky, Richard G., 4,343,887, Cl. 430-272.000.
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Koenig, Walter, Jr., 4,343,970, Cl. 179-1.50R.
Kustka, George J.; and Sipek, Steven J., 4,343,759, Cl. 375-14.000.
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Lepselter, Martin P.; and Sze, Simon M., 4,343,082, Cl. 29-576.00B.
Reichmanis, Elsa; and Wilkins, Cletus W., Jr., 4,343,889, Cl. 430-311.000.
Belleli, Riccardo. Counterflow heat exchanger. 4,343,351, Cl. 165-81.000.
Belschner, Elmer. Brush for grooming animals. 4,343,265, Cl. 119-83.000.
Belvedere, Mark. Boat bumpers. 4,343,258, Cl. 114-219.000.
Ben-Dror, Jonathan: *See*—
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Benaglio, Reno V.: *See*—
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Bendix Corporation, The: *See*—
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McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., 4,343,225, Cl. 91-52.000.
Benedicto, John S. J.: *See*—
Hallberg, Frederick C.; and Benedicto, John S. J., 4,343,287, Cl. 125-23.00R.
Benninger, Siegfried; Reining, Karl; and Krasel, Werner, to Hoechst Aktiengesellschaft. Process for the production of aqueous solutions of sodium chloride from rock salt. 4,343,621, Cl. 23-293.00R.
Bensley, Douglas W. Method of making footwear. 4,343,057, Cl. 12-142.00D.
Berdat, Henry F., to Gerber Scientific Instrument Company, The. Plotting apparatus and method utilizing encoded optical means. 4,343,540, Cl. 354-4.000.

Berejka, Anthony J., to Radiation Dynamics, Inc. Method of sealing an item in a covering comprising a composition of a polyethylene and isobutylene copolymer. 4,343,864, Cl. 428-500.000.

Berger, Friedrich: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Berger-Lohr, Bernd: *See—*
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,343,936, Cl. 542-417.000.

Bergkvist, Lars A. Suspension device for angle indicator. 4,343,090, Cl. 33-275.00R.

Bergland, Paul W., to Bobst Champlain, Inc. System for controlling emissions of a solvent from a printing press. 4,343,096, Cl. 34-47.000.

Bergling, Gunnar, to Aktiebolaget SKF. Roller suspension. 4,343,055, Cl. 441-3.000.

Bergot, Thierry, to Cibie Projecteurs. Headlamps having sealed optical units and replaceable light bulbs. 4,344,119, Cl. 362-267.000.

Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., to American Cyanamid Company. Novel 2-substituted-3,4-epoxycyclopentan-1-ones, 2-substituted-3,4-epoxycyclopentan-1-ols, and various 2-substituted-cyclopentenones. 4,343,949, Cl. 562-503.000.

Bernhagen, James R., to Caterpillar Tractor Co. Tapered spline and method of manufacturing same. 4,343,563, Cl. 403-282.000.

Bertone, Enrico, to RIV-SKF Officine di Villar Perosa S.p.A. Rolling bearing. 4,343,520, Cl. 308-178.000.

Berube, Gene R.: *See—*
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.

Bessyo, Hidekazu: *See—*
Kawai, Jun; Bessyo, Hidekazu; and Hibino, Hidehiko, 4,343,744, Cl. 260-412.100.

Bhagwat, Pradeep; and Stefanovic, Victor R., to Canadian Patents & Development Limited. Multilevel PWM inverter. 4,344,123, Cl. 363-43.000.

Bhatti, Mohinder S., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass fibers. 4,343,636, Cl. 65-1.000.

Bilhartz, James R.: *See—*
Riggs, Emmet D.; Brownscombe, Eugene R.; and Bilhartz, James R., 4,343,356, Cl. 166-60.000.

Billings Energy Corporation: *See—*
Simons, Harold M., 4,343,770, Cl. 422-112.000.

Billings, Mickey E.: *See—*
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., 4,343,965, Cl. 174-72.00B.

Binnig, Gerd; and Rohrer, Heinrich, to International Business Machines Corporation. Scanning tunneling microscope. 4,343,993, Cl. 250-306.000.

BioResearch Inc.: *See—*
Conti, James C.; Findl, Eugene; and Wang, William, 4,344,035, Cl. 324-453.000.

Birch, John R.; Cartwright, Terence; and Ford, John A., to G. D. Searle & Co. Process and apparatus for growing animal cells. 4,343,904, Cl. 435-240.000.

Bischofberger, Walter; and Zeller, Norbert, to BBC Brown, Boveri & Company, Ltd. Hydraulic drive for electrical switches. 4,343,972, Cl. 200-81.00R.

Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., to Western Electric Co., Inc. Article carrying a distinctive mark. 4,344,064, Cl. 338-334.000.

Bjareklint, Ake: *See—*
Schwartz, Stephan; Soderstrom, Roland; and Bjareklint, Ake, 4,343,982, Cl. 219-118.000.

Blades, Frederick K., to PureCycle Corporation. Nephelometer. 4,343,552, Cl. 356-339.000.

Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., to Exxon Research & Engineering Co. Multi-stage process for combusting fuels containing fixed-nitrogen chemical species. 4,343,606, Cl. 431-10.000.

Blanc, Claude: *See—*
Batteux, Jacques; Blanc, Claude; and Grancher, Pierre, 4,343,778, Cl. 423-228.000.

Blanchard, Clarence E., to Outboard Marine Corporation. Outboard motor including a two speed transmission. 4,343,612, Cl. 440-75.000.

Blanchard, Richard A.: *See—*
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., 4,344,081, Cl. 357-43.000.

Blaser, Anton J. V-Shaped centering fixture for optical encoders. 4,343,992, Cl. 250-231.0SE.

Blaser, Richard F. Charge forming device for internal combustion engine. 4,343,279, Cl. 123-445.000.

Blawert, Dieter: *See—*
Stadler, Eberhard; and Blawert, Dieter, 4,343,373, Cl. 177-50.000.

Bleazey, John C.; and Guarracini, Joseph, to RCA Corporation. Driver arrangement for stylus lifting/lowering apparatus. 4,344,166, Cl. 369-216.000.

Blegen, James R., to Ashland Oil, Inc. Vapor permeation curable polyester resin coating compositions for flexible substrates. 4,343,839, Cl. 427-340.000.

Bleha, William P., Jr., to Hughes Aircraft Company. Liquid crystal light valve. 4,343,535, Cl. 350-342.000.

Blomquist, Robert O.: *See—*
Sutton, Roger F.; Blomquist, Robert O.; and Luck, Allan J., 4,343,849, Cl. 428-157.000.

Bobst Champlain, Inc.: *See—*
Bergland, Paul W., 4,343,096, Cl. 34-47.000.

Bockman, Ole K.; and Rydland, Kjell, to A/S Norsk Viftefabrikk. Heat exchanger for gases. 4,343,352, Cl. 165-104.160.

Bodkin, Robert E.: *See—*
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., 4,343,095, Cl. 34-16.500.

Bodnar, Endre: *See—*
Ross, Donald N.; Bodnar, Endre; and Hoskin, William J., 4,343,048, Cl. 3-1.500.

Bodnar, Michael W.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.

Boehringer Ingelheim GmbH: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.

Boehringer Mannheim GmbH: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

Boeing Company, The: *See—*
Dumar, William L., Jr.; and Ledlow, Jimmie E., 4,343,499, Cl. 285-263.000.

Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends. 4,343,918, Cl. 525-194.000.

Bohman, Carl E.: *See—*
Strosser, Richard P.; Chow, Mark K.; and Bohman, Carl E., 4,344,074, Cl. 340-684.000.

Boigk, Dieter G.: *See—*
Shelton, Lawrence S.; Boigk, Dieter G.; and Gabriel, William L., 4,343,579, Cl. 411-442.000.

Bokelman, Gordon H., to Philip Morris Incorporated. Method of treating green tobacco. 4,343,317, Cl. 131-290.000.

Boliden Aktiebolag: *See—*
Sunna, G. Sigvard, 4,343,199, Cl. 73-863.430.

Bonaventura, Celia: *See—*
Bonaventura, Joseph; and Bonaventura, Celia, 4,343,715, Cl. 252-186.000.

Bonaventura, Joseph; and Bonaventura, Celia, to Duke University. Immobilized hemoglobin, and processes for extracting oxygen from fluids using the same. 4,343,715, Cl. 252-186.000.

Bonnel, Madeleine: *See—*
Morin, Francois; and Bonnel, Madeleine, 4,343,081, Cl. 29-571.000.

Bonsack, James P., to SCM Corporation. Entrained-flow chlorination of fine titaniferous materials. 4,343,775, Cl. 423-78.000.

Booth, Raymond H.: *See—*
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.

Boothe, James H.: *See—*
Sassiver, Martin L.; and Boothe, James H., 4,343,938, Cl. 544-27.000.

Borda, William F.; Fry, Thomas M.; and Rist, Charles A., Jr., to Dolfin Corporation. Stretchable speed swim suit. 4,343,044, Cl. 2-67.000.

Borden, Inc.: *See—*
Williams, James H., 4,343,718, Cl. 252-352.000.

Bosse, Peter S.: *See—*
Webber, Dean A.; and Bosse, Peter S., 4,344,107, Cl. 361-433.000.

Bostic, John S., to Belavich, Joseph E. X-Ray film holder. 4,344,182, Cl. 378-170.000.

Bot, Jean-Yves, to Framatome. Fixed point device between pipework and a support. 4,343,497, Cl. 285-61.000.

Bouldin, Eric W.: *See—*
Drexler, Jerome; and Bouldin, Eric W., 4,343,879, Cl. 430-14.000.

Bowers, James R.: *See—*
Victor, Michael; and Bowers, James R., 4,343,195, Cl. 73-861.660.

Bowman, Joseph A.: *See—*
Erwin, Dennis C.; Bowman, Joseph A.; and Marsalka, Joseph P., 4,344,065, Cl. 340-29.000.

Bradley, Irving; and Hanson, James M., to General Electric Company. Plastic PAR lamp construction with tapered reinforcement. 4,344,120, Cl. 362-349.000.

Brammer, Hartmut; and Leiber, Heinz, to Robert Bosch GmbH. Contactless ignition system of unitary construction. 4,343,285, Cl. 123-647.000.

Brantingham, George L.; and Wiggins, Richard H., Jr., to Texas Instruments Incorporated. System using digital filter for waveform or speech synthesis. 4,344,148, Cl. 364-724.000.

Braun Aktiengesellschaft: *See—*
Caranicas, John C., 4,343,321, Cl. 132-48.00A.

Breig, Kurt: *See—*
Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, 4,343,936, Cl. 542-417.000.

Breitfuss, Thomas K. Method and apparatus for making an underground pipeline. 4,343,573, Cl. 405-155.000.
Bremer, C. Hermann, to Barmag Barmer Maschinenfabrik. Method and apparatus for lubricating bearings. 4,343,378, Cl. 184-6.260.
Brems, John H. Base support for transfer machines. 4,343,073, Cl. 29-38.00C.
Brenik, Wenzel; and Rudhard, Heinz, to Linde Aktiengesellschaft. Method of endothermic fermentation of tobacco. 4,343,318, Cl. 131-300.000.
Brenneman, Richard S.: *See*—
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., 4,343,398, Cl. 206-219.000.
Brennstoffinstitut Freiberg: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Breza, Cyril J., deceased (by Breza, Therese H., executrix); and Schaefer, William E., to Du Pont de Nemours, E. I., and Company. Resin-bonded water-bearing explosive. 4,343,663, Cl. 149-4.000.
Breza, Therese H., executrix: *See*—
Breza, Cyril J., deceased; and Schaefer, William E., 4,343,663, Cl. 149-4.000.
Bricot, Claude; and Leterme, Dominique, to Thomson-CSF. Optical device for access to a track carried by a data carrier and optical memory system incorporating such a device. 4,344,164, Cl. 369-44.000.
Bridges, Charles D., to Combustion Engineering, Inc. Sealing device with thermal expansion pressure accumulator. 4,343,477, Cl. 277-73.000.
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., to AMP Incorporated. Zero insertion force connector. 4,343,524, Cl. 339-74.00R.
Brighton, Walter A.: *See*—
Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., 4,343,268, Cl. 123-90.400.
Brinkman, Willem, to Holec, N.V. Electromagnetically actuated pumps. 4,343,275, Cl. 123-382.000.
British Petroleum Company Limited, The: *See*—
Math, Friedrich C., 4,343,124, Cl. 52-226.000.
Brockmeyer, Jerry W., to Swiss Aluminium Ltd. Ceramic foam filter. 4,343,704, Cl. 210-509.000.
Brody, Deborah S.: *See*—
Wood, Robert W.; Hoefler, Andrew C.; and Brody, Deborah S., 4,343,819, Cl. 426-96.000.
Brody, Reid. Dual mode guitar. 4,343,217, Cl. 84-1.160.
Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes. 4,343,808, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes employing 2-((halophenoxy)methyl)-2-imidazolines. 4,343,809, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., to Dow Chemical Company, The. Method of inhibiting sickling of sickle erythrocytes using 2-((haloanilino)methyl)-2-imidazolines. 4,343,810, Cl. 424-273.00R.
Bron, Dan. Adjustable-rate, constant output infusion set. 4,343,305, Cl. 128-214.00R.
Brosius, Klaus; Lindenthal, Hans; and Zaunberger, Franz X., to Voith Getriebe KG. Hydrodynamic torque transmitting unit, particularly for a hydrodynamic brake. 4,343,383, Cl. 188-296.000.
Brosnan, Denis A. Magnesium oxide based heat storage device. 4,343,989, Cl. 219-378.000.
Brouwer, Hendrik L.: *See*—
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.
Brown, Arthur: *See*—
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.
Brown, Dallas B. Direct current motor and generator. 4,344,007, Cl. 310-46.000.
Brown, Ralph V., to Facet Enterprises, Inc. Reciprocating fluid pump having a hall switch. 4,343,597, Cl. 417-417.000.
Brown, Robert, to Rheological Systems, Inc. Apparatus and process for hot-stamping containers. 4,343,670, Cl. 156-233.000.
Brown, Robert L. Environmental lamp. 4,344,112, Cl. 362-96.000.
Brown & Williamson Tobacco Corporation: *See*—
Cantrell, Daniel V., 4,343,319, Cl. 131-336.000.
Browning Engineering Corporation: *See*—
Browning, James A., 4,343,605, Cl. 431-8.000.
Browning, James A., to Browning Engineering Corporation. Method of dual fuel operation of an internal burner type ultra-high velocity flame jet apparatus. 4,343,605, Cl. 431-8.000.
Brownlee, Morris L. Safety device for nuclear fission reactors. 4,343,762, Cl. 376-280.000.
Brownscombe, Eugene R.: *See*—
Riggs, Emmet D.; Brownscombe, Eugene R.; and Bilhartz, James R., 4,343,356, Cl. 166-60.000.
Bruce, William C., Jr.; Musa, Fuad H.; and Ritter, Terry F., to Motorola, Inc. Method for synchronizing hardware and software. 4,344,133, Cl. 364-200.000.
Brugger, Gottfried. Process of applying a titanium dioxide coating to a centrifugal casting mold. 4,343,345, Cl. 164-33.000.
Brunner, Herwig: *See*—
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.
Bruynseels, Jean P., to Compagnie Neerlandaise de l'Azote. Method of making granules built up from a core and an envelope. 4,343,622, Cl. 23-313.0FB.
Bryant, Charles P., to Lubrizol Corporation, The. Hydroxylalkyl hydroxy-aromatic condensation products as fuel and lubricant additives. 4,343,740, Cl. 260-326.5FM.
Buck, Alan C. Devices for supplementing conventional liquid fuels in internal combustion engines with gaseous fuel supplements. 4,343,272, Cl. 123-297.000.
Buckley, Galen L.; and Martin, Harold W. Universally adjustable ranging target and retro-reflector housing bracket. 4,343,550, Cl. 356-5.000.
Building Research Institute, Ministry of Construction: *See*—
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Bulso, Joseph D., Jr.; and Lewers, William R., to Redicon Corporation. Double action cupper having improved can removal means. 4,343,173, Cl. 72-345.000.
Bunge, Ernst: *See*—
Kuhn, Michael; and Bunge, Ernst, 4,344,031, Cl. 324-77.00R.
Burden, Martin J.; and Williams, Richard C., to Schlegel Corporation. Elastomeric strip and method of manufacturing same. 4,343,845, Cl. 428-122.000.
Burg, Marion, to Du Pont de Nemours, E. I., and Company. Use of radiation crosslinkable polyesters and polyesterethers in printing plates. 4,343,888, Cl. 430-302.000.
Burgin, Kermit H. Apparatus for producing and collecting a liquid extract and a dry by-product from a mash. 4,343,233, Cl. 100-116.000.
Buriks, Rudolf S.: *See*—
Becker, Harold L.; and Buriks, Rudolf S., 4,343,730, Cl. 524-551.000.
Burnett, Archibald L.: *See*—
Miller, John C.; and Burnett, Archibald L., 4,343,755, Cl. 264-176.00R.
Burri, Peter, to Ciba-Geigy Corporation. Indolinospiropyrane compounds. 4,343,944, Cl. 546-15.000.
Burroughs Corporation: *See*—
Armstrong, John L., 4,343,451, Cl. 248-500.000.
Barnes, George H., 4,344,134, Cl. 364-200.000.
Chambors, John M.; and Wallace, Harry L., 4,344,079, Cl. 346-140.00R.
Dakroub, Housan; and Concannon, David J., 4,344,036, Cl. 328-61.000.
Urquhart, Roderick M., 4,343,546, Cl. 354-281.000.
Burroughs Wellcome Co.: *See*—
Wilkinson, Samuel, 4,343,795, Cl. 424-177.000.
Busch, Charles H., Jr. Heat pipe device and heat pipe fabricating process. 4,343,349, Cl. 165-1.000.
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., to Chesebrough-Pond's Inc. Compositions, articles and methods for polishing surfaces. 4,343,910, Cl. 521-82.000.
Bussco Engineering, Inc.: *See*—
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., 4,343,965, Cl. 174-72.00B.
Busse, Gerhard. System for measuring the radiation power of power-modulated transmitters, in particular of lasers. 4,344,172, Cl. 372-29.000.
Butscher, Franz, to MTU Motoren - und Turbinen-Union Friedrichshafen GmbH. Injection pump control arrangement. 4,343,274, Cl. 123-357.000.
C. D. Sparling Company: *See*—
Guenther, Torbett B., 4,343,052, Cl. 4-254.000.
C. R. Bard, Inc.: *See*—
Jespersen, Chris A., 4,343,316, Cl. 128-771.000.
C & T Line Construction, Inc.: *See*—
Grounds, Thomas M., 4,343,443, Cl. 242-86.700.
Cabot Corporation: *See*—
Rivers, Ronald D., 4,343,650, Cl. 75-213.000.
Cabot, Richard C.; and Hofer, Bruce E., to Tektronix, Inc. Automatic IM distortion test selector. 4,344,029, Cl. 324-57.00R.
Cairenius, Runo M. J. Fluid flow meter. 4,343,191, Cl. 73-861.050.
Cairns, Thomas M.; and Connors, David G., to Ford Motor Company. Printed circuit board edge connector. 4,343,523, Cl. 339-59.00M.
Calcagno, Benedetto: *See*—
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.
Caldwell, Michael C. Method for carbonating liquids in situ. 4,343,824, Cl. 426-477.000.
Callahan, Kent R., to American Microsystems, Inc. Dual channel digitally switched capacitor filter. 4,344,050, Cl. 333-173.000.
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., to Vitafin N.V. Pacemaker output circuit. 4,343,312, Cl. 128-419.0PG.
Calspan Corporation: *See*—
Leonard, Richard P., 4,343,646, Cl. 71-25.000.
Calvert, Murray B. Pentagonal puzzle. 4,343,471, Cl. 273-157.00R.
Cama, Lovji D.: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,343,937, Cl. 544-021.000.
Campanini, Sergio. Swivel hose coupling. 4,343,498, Cl. 285-174.000.
Campanini, Sergio. Slack adjuster. 4,343,561, Cl. 403-97.000.

Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., to UOP Inc. Double wall tubing assembly and method of making same. 4,343,350, Cl. 165-11.00R.
Campbell, June H. Portable pouch for insulin. 4,343,158, Cl. 62-372.000.
Campbell, Willis R.: *See*—
Oellig, Franklin A.; and Campbell, Willis R., 4,343,141, Cl. 56-341.000.
Canada, Her Majesty the Queen in Right of: *See*—
Lazowski, James C.; Katz, Sharron; and Winship, John A., 4,343,047, Cl. 2-411.000.
Canada Post Corporation/Societe Canadienne de Postes: *See*—
Martineau, Jean-Claude P., 4,343,430, Cl. 229-69.000.
Canadian Patents & Development Limited: *See*—
Bhagwat, Pradeep; and Stefanovic, Victor R., 4,344,123, Cl. 363-43.000.
Reilly, James P.; and Haykin, Simon, 4,344,040, Cl. 329-50.000.
Caney, Steven. Multiple game device. 4,343,474, Cl. 273-237.000.
Cann, Irving. Synthetic onyx and method. 4,343,752, Cl. 264-71.000.
Canon Kabushiki Kaisha: *See*—
Nagashima, Nao, 4,343,547, Cl. 355-14.00R.
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Tateoka, Masamichi; and Tsuji, Takao, 4,343,531, Cl. 350-6.500.
Toyomura, Shigeru, 4,343,968, Cl. 178-23.00R.
Cantrell, Daniel V., to Brown & Williamson Tobacco Corporation. Cigarette filter. 4,343,319, Cl. 131-336.000.
Caranicas, John C., to Braun Aktiengesellschaft. Hair clip. 4,343,321, Cl. 132-48.00A.
Cardinal, David V. Chess instruction apparatus. 4,343,609, Cl. 434-128.000.
Carlisle Tire & Rubber Company, Div. of Carlisle Corp.: *See*—
Hollis, Jack L., 4,343,667, Cl. 156-157.000.
Carlo Erba Strumentazione S.p.A.: *See*—
Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, 4,343,766, Cl. 422-63.000.
Carlon, Hugh R.; and Gerber, Bernard V., to United States of America, Army. Flow compensated gas comparison probe. 4,343,177, Cl. 73-23.000.
Carlson, Gene D.: *See*—
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,343,494, Cl. 282-27.500.
Carr, John F.: *See*—
Baines, Eric; and Carr, John F., 4,343,786, Cl. 424-52.000.
Carr, William F.; and Chen, James M., to Engelhard Corporation. Ozone abatement catalyst having improved durability and low temperature performance. 4,343,776, Cl. 423-210.000.
Cartwright, Terence: *See*—
Birch, John R.; Cartwright, Terence; and Ford, John A., 4,343,904, Cl. 435-240.000.
Cash, Herbert B.: *See*—
Stowers, Jeffrey P.; Stickle, Robert E.; and Cash, Herbert B., 4,344,033, Cl. 324-158.00F.
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., to General Electric Company. Latch assembly for static trip circuit breakers. 4,344,054, Cl. 335-169.000.
Caterpillar Tractor Co.: *See*—
Bahnfleth, William A., 4,343,119, Cl. 52-180.000.
Belke, William H.; and Grim, George B., 4,343,624, Cl. 48-61.000.
Bernhagen, James R., 4,343,563, Cl. 403-282.000.
Goloff, Alexander; and Grim, George B., 4,343,355, Cl. 165-166.000.
Habiger, Cyril W., 4,343,152, Cl. 60-452.000.
Hart, Cullen P., 4,343,338, Cl. 152-153.000.
Hollandsworth, Larry A., 4,343,374, Cl. 180-69.00R.
Klekamp, William H.; and Tullis, Philip H., 4,343,101, Cl. 37-129.000.
Lorimor, Larry W., 4,343,151, Cl. 60-422.000.
Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., 4,344,139, Cl. 364-426.000.
Rice, Stuart L., 4,343,661, Cl. 148-134.000.
Shuler, Lucien B.; and Spivey, William J., Jr., 4,343,150, Cl. 60-399.000.
Smead, Robert G.; Richards, Thomas J.; and Lanchantin, Charles E., Jr., 4,343,828, Cl. 427-27.000.
Stinson, Robert A., 4,343,155, Cl. 60-586.000.
Styck, Wayne G., 4,343,588, Cl. 414-701.000.
York, Lyle E., 4,343,100, Cl. 37-126.0AE.
Caumartin, Francois; Vidal, Jean L.; and Mangin, Pierre, to NAOHTA-CHIMIE Societe Anonyme. Fluidized bed terpolymerization of ethylene, propylene and non-conjugated diene. 4,343,926, Cl. 526-68.000.
Cavanagh, Kenneth M., to Marshall & Williams Company. Narrow fabric blocker. 4,343,439, Cl. 242-41.000.
Cavazza, Claudio. Pharmaceutical composition comprising an acyl-carnitine, for treating peripheral vascular diseases. 4,343,816, Cl. 424-316.000.
Cavitron Corporation: *See*—
Ragsdale, Charles W., 4,344,037, Cl. 328-114.000.
Celtite, Inc.: *See*—
Patel, Natvarlal K.; and Plaisted, Anthony C., 4,343,399, Cl. 206-222.000.
Central Plastics Company: *See*—
Pourchot, Melvin E., 4,343,518, Cl. 308-4.00A.
Ceraver: *See*—
Minjolle, Louis, 4,343,604, Cl. 425-192.00R.
Pargamin, Laurent, 4,343,966, Cl. 174-140.00S.
Weber, Jean, 4,343,354, Cl. 165-165.000.
Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., to American Cyanamid Company. Glycolic acid esters and amides of bis(p-disubstitutedaminophenyl)carbinol. 4,343,939, Cl. 544-165.000.
Cetec Corporation: *See*—
Edwards, Robert R., 4,344,184, Cl. 455-95.000.
Cexkoslovenska akademie ved: *See*—
Kahovec, Jaroslav, 4,343,920, Cl. 525-328.200.
CFS Continental, Inc.: *See*—
Roseman, Arnold S., 4,343,820, Cl. 426-103.000.
Chalmers, Wallace G. Spigot joint. 4,343,560, Cl. 403-13.000.
Chambors, John M.; and Wallace, Harry L., to Burroughs Corporation. System for matrix printing. 4,344,079, Cl. 346-140.00R.
Champion International Corporation: *See*—
Thompson, Kenneth P., 4,343,858, Cl. 428-342.000.
Champion Spark Plug Europe S.A.: *See*—
van den Berg, Johan H., 4,343,062, Cl. 15-250.320.
van den Berg, Johan H.; and Maiocco, Guiseppe, 4,343,064, Cl. 15-250.320.
Chang, Sing-Hsiung. Hydrophilic, soft and oxygen permeable copolymer compositions. 4,343,927, Cl. 526-262.000.
Chang, Wen-Hsuan; O'Dwyer, James B.; and Peffer, John R., to PPG Industries, Inc. Coating compositions based on polyol-containing film forming components and organic alcoholic reactive diluents. 4,343,925, Cl. 525-440.000.
Chao, Robert L., to Supertex, Inc. Detection circuit and structure therefor. 4,344,002, Cl. 307-270.000.
Chase, Ascher, to General Foam Plastics Corp. Artificial Christmas tree. 4,343,842, Cl. 428-8.000.
Chasek, Norman E. Display method and apparatus for efficiently communicating the status of an ongoing process or system by the simultaneous display of many normalized parameter deviations. 4,344,145, Cl. 364-551.000.
Chatard, Michel; Sonnet, Alain; and Thiery, Jean, to Commissariat a l'Energie Atomique. Turbo-coring device equipped with a following pipe. 4,343,370, Cl. 175-107.000.
Chatzipetros, Johann; and Helten, Manfred, to Kernforschungsanlage Julich GmbH. Double-wall vessel especially Dewar flasks, with wall spacer. 4,343,413, Cl. 220-425.000.
Chekroun, Claude; Michel, Yves C.; and Sadones, Henri, to Societe d'Etude du Radant. Adaptive spatial microwave filter. 4,344,077, Cl. 343-754.000.
ChemVen, Inc.: *See*—
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.
Chen, James M.: *See*—
Carr, William F.; and Chen, James M., 4,343,776, Cl. 423-210.000.
Cherry Electrical Products Corp.: *See*—
Main, Robert T., 4,343,973, Cl. 200-159.00B.
Cherry, James H., to Weyerhaeuser Company. Octagonal bulk bin. 4,343,429, Cl. 229-38.000.
Chesebrough-Pond's Inc.: *See*—
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Chesnut, Ronald D.; and Tepper, James M. Electrical box cover. 4,343,411, Cl. 220-242.000.
Chiang, Ping-Wang, to Amdahl Corporation. System for design and production of integrated circuit photomasks and integrated circuit devices. 4,343,877, Cl. 430-5.000.
Chiang, Ping-Wang, to Amdahl Corporation. System for providing photomask alignment keys in semiconductor integrated circuit processing. 4,343,878, Cl. 430-5.000.
Chichibu Cement Co., Ltd.: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.
Children's Hospital Medical Center, The: *See*—
Lian, Jane B.; Levy, Robert J.; and Gallop, Paul M., 4,343,734, Cl. 260-112.00B.
Chludzinski, James J.: *See*—
Baker, Rees T. K.; and Chludzinski, James J., 4,343,658, Cl. 148-6.300.
Cho, Mitsuo: *See*—
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Chou, Richard C., to Franklin Institute, The. Motion systems providing three or four degrees of freedom. 4,343,610, Cl. 434-58.000.
Chow, Mark K.: *See*—
Strosser, Richard P.; Chow, Mark K.; and Bohman, Carl E., 4,344,074, Cl. 340-684.000.
Choy, Benedict C. K.: *See*—
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., 4,344,081, Cl. 357-43.000.
Chr. Eisele Machinenfabrik GmbH. & Co. KG: *See*—
Drixler, Karl, 4,343,213, Cl. 83-397.000.
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, to Merck & Co., Inc. 3-Substituted-7-methoxy-7-amino-3-cephem-4-carboxylic acids. 4,343,937, Cl. 544-021.000.
Chronowski, Robert A., to Aqua-Chem, Inc. Fluidized bed combustion method and apparatus. 4,343,247, Cl. 110-245.000.
Ciba-Geigy Corporation: *See*—
Abel, Heinz; and Schafer, Paul, 4,343,620, Cl. 8-557.000.
Burri, Peter, 4,343,944, Cl. 546-15.000.

Cibie Projecteurs: *See*—
Bergot, Thierry, 4,344,119, Cl. 362-267.000.
Ciesemier, Allen L.; Tait, Robert J.; and Smith, Leonard A., to Littelfuse, Inc. Enclosed plug-in fuse assembly. 4,344,060, Cl. 337-260.000.
Ciliberti, David F., to Westinghouse Electric Corp. Hot gas particulate removal. 4,343,631, Cl. 55-302.000.
Circon Corporation: *See*—
Miller, Frederick A., 4,344,092, Cl. 358-217.000.
Claas OHG: *See*—
Hegger, Josef, 4,343,140, Cl. 56-17.100.
Clancy, John J.: *See*—
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., 4,343,398, Cl. 206-219.000.
Clarion Co., Ltd.: *See*—
Takai, Kazuki, 4,344,097, Cl. 360-96.600.
Clarke, Brian P.: *See*—
Stirling, Irene; and Clarke, Brian P., 4,343,807, Cl. 424-272.000.
Clausen, Robert L. Friction heat generator. 4,343,291, Cl. 126-247.000.
Clayton Dewandre & Company Limited: *See*—
Levington, Henry J., 4,343,517, Cl. 303-7.000.
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Core energy plant with closed working gas circuit. 4,343,681, Cl. 376-293.000.
Clickner, Peter P.: *See*—
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., 4,344,054, Cl. 335-169.000.
Close, Donald, to David Hudson, Inc. Novel fluoroelastomer film compositions containing phenoxy resins and method for the preparation thereof. 4,343,841, Cl. 427-386.000.
Club Car Inc.: *See*—
Samuelson, Donald G.; and Farris, Paul R., 4,343,503, Cl. 296-84.00D.
Coal Industry (Patents) Limited: *See*—
Higgs, Robert H.; and Jones, John M., 4,343,515, Cl. 299-75.000.
Cobb, Gary L.: *See*—
Cook, Jerry A.; and Cobb, Gary L., 4,343,694, Cl. 209-9.000.
Cocron, Istvan, to AGFA-Gevaert AG. Digital control system for automatic-focus cameras. 4,344,024, Cl. 318-640.000.
Codex Corporation: *See*—
Qureshi, Shahid U. H., 4,344,176, Cl. 375-15.000.
Cohen, Arnold, to Reichhold Chemicals Incorporated. Polyvinyl chloride shoe sole molding composition containing cellulosic fibrous flock. 4,343,727, Cl. 524-41.000.
Coleman, Cecil A., to Balfour Lumber Company. Spray system for breakdown hoist. 4,343,607, Cl. 432-18.000.
Colgate-Palmolive Company: *See*—
Baines, Eric; and Carr, John F., 4,343,786, Cl. 424-52.000.
Collins, Edward J.; Suster, Mary E.; and Weber, Vincent H., to General Electric Company. Flash lamp array having printed circuit. 4,344,108, Cl. 362-13.000.
Combustion Engineering, Inc.: *See*—
Bridges, Charles D., 4,343,477, Cl. 277-73.000.
Tanca, Michael C., 4,343,627, Cl. 48-202.000.
Comer, William T.: *See*—
Kreighbaum, William E.; and Comer, William T., 4,343,940, Cl. 544-283.000.
Commissariat a l'Energie Atomique: *See*—
Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, 4,343,298, Cl. 126-450.000.
Chatard, Michel; Sonnet, Alain; and Thiery, Jean, 4,343,370, Cl. 175-107.000.
Farcy, Paul, 4,343,994, Cl. 250-390.000.
Commissariate a l'Energie Atomique: *See*—
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, 4,343,098, Cl. 37-54.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
Compagnie Generale de Radiologie: *See*—
Klausz, Remy, 4,343,995, Cl. 278-21.000.
Compagnie Internationale de Participation et d'Investissement "Cipari" S.A.: *See*—
Devreux, Andre F., 4,343,231, Cl. 99-277.200.
Compagnie Internationale pour l' Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Girard, Paul, 4,344,131, Cl. 364-200.000.
Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme): *See*—
Mollier, Jean H., 4,344,155, Cl. 365-200.000.
Compagnie Neerlandaise de l'Azote: *See*—
Bruynseels, Jean P., 4,343,622, Cl. 23-313.0FB.
Concannon, David J.: *See*—
Dakroub, Housan; and Concannon, David J., 4,344,036, Cl. 328-61.000.
Conder, Terrence M., to Minnesota Mining and Manufacturing Company. Transfer film. 4,343,855, Cl. 428-332.000.
Cone, Richard E., to Questor Corporation. Child car seat and restraining system. 4,343,510, Cl. 297-250.000.
Connecticut Valley Paper & Envelope Co., Inc.: *See*—
Isaacson, Robert, 4,343,105, Cl. 40-155.000.
Connolly, James D. Resistance welding machine. 4,343,981, Cl. 219-56.000.
Connors, David G.: *See*—
Cairns, Thomas M.; and Connors, David G., 4,343,523, Cl. 339-59.00M.
Conti, James C.; Findl, Eugene; and Wang, William, to BioResearch Inc. Method and apparatus for determination of changes in the surface charge of materials. 4,344,035, Cl. 324-453.000.
Contrepois, Michel G.: *See*—
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Cook, Carroll J.; and Henthorn, Timothy K., to Rockwell International Corporation. Low noise high stability FM transmitter. 4,344,185, Cl. 455-110.000.
Cook, Jerry A.; and Cobb, Gary L., to Anglo-American Clays Corporation. Magnetic beneficiation of clays utilizing magnetic seeding and flotation. 4,343,694, Cl. 209-9.000.
Coppola, Patrick S.: *See*—
Kure-Jensen, Jens; and Coppola, Patrick S., 4,343,454, Cl. 251-26.000.
Coquard, Jean; and Goletto, Jean, to Rhone-Poulenc Industries. Novel polyesteramides having low glass transition temperatures. 4,343,743, Cl. 260-404.500.
Corbier, Wierd, to U.S. Philips Corporation. Coffee maker. 4,343,232, Cl. 99-299.000.
Corfa, Yves: *See*—
Balligand, Pierre; Corfa, Yves; Lemercier, Pierre; Marchal, Paul; and Vertut, Jean, 4,343,098, Cl. 37-54.000.
Cornelis, Christiaan A.; and De Keizer, Cornelis, to IHC Holland N.V. Method for adapting the operation of a dredging apparatus. 4,343,102, Cl. 37-195.000.
Corsette, Douglas F. Dispensing pump locking means. 4,343,417, Cl. 222-153.000.
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., to RCA Corporation. Variable-velocity film exposing and developing apparatus. 4,344,088, Cl. 358-132.000.
Costa, Laurent: *See*—
Virte, Jean; and Costa, Laurent, 4,343,405, Cl. 211-88.000.
Cotrell, Phillip L.: *See*—
Egan, Richard R.; and Cotrell, Phillip L., 4,343,726, Cl. 252-547.000.
Coulter Systems Corp.: *See*—
Weber, Harold J., 4,344,121, Cl. 363-16.000.
Counts, Thomas G.: *See*—
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.
Coussot, Gerard, to Thomson-CSF. Elastic surface wave transducer and filter incorporating such a transducer. 4,344,051, Cl. 333-194.000.
CPC International Inc.: *See*—
Ushiro, Soichiro, 4,343,902, Cl. 435-177.000.
Crane Co.: *See*—
Skarvada, Thomas, 4,344,137, Cl. 364-426.000.
Crane, Hewitt D.; and Wolf, Daniel E., to Stanford Research Institute. Dynamic creation of signatures. 4,344,135, Cl. 364-419.000.
Creusot-Loire: *See*—
Haulotte, Georges, 4,343,379, Cl. 187-18.000.
Crossley, Roger; and Dickinson, Kay H., to John Wyeth & Brother Limited. Heterocyclic compounds. 4,343,805, Cl. 424-263.000.
Crothers, William R. Folding cart. 4,343,487, Cl. 280-654.000.
Crutcher Corporation: *See*—
Paysinger, Joseph R., 4,343,207, Cl. 82-4.00R.
Csaszar, Ernest J., to General Kap (P.R.) Corporation. Tamper-evident plastic closure. 4,343,408, Cl. 215-258.000.
Cucuiat, Marius: *See*—
Turta, Alexandru; and Cucuiat, Marius, 4,343,362, Cl. 166-267.000.
Cummins Engine Company, Inc.: *See*—
Jaliwala, Salim A.; and Day, Eric, 4,343,276, Cl. 123-383.000.
Shaw, Terrence M., 4,343,267, Cl. 123-41.810.
Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., 4,343,268, Cl. 123-90.400.
Cummiskey, Peter, to Bell Telephone Laboratories, Incorporated. Redundant word frame synchronization circuit. 4,344,180, Cl. 375-116.000.
Cunningham, Charles J.: *See*—
Jones, Allen P.; and Cunningham, Charles J., 4,343,835, Cl. 427-209.000.
Cunningham, James L.: *See*—
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.
Cunningham, Robert D.: *See*—
Sarver, Robert B.; and Arthur, W. Eugene, 4,343,567, Cl. 404-10.000.
Currin, Cedric G.; and Van Wert, Bernard, to Dow Corning Corporation. Solar radiation reflector with a cellulosic substrate and method of making. 4,343,533, Cl. 350-288.000.
Curtis Dyna-Products: *See*—
Stevens, Robert E.; Stowe, John H.; and Emerich, Jeremiah M., 4,343,719, Cl. 252-359.0CG.
Czelen, John C. Condiment grinder. 4,343,437, Cl. 241-169.100.
Czuszak, Charles C.: *See*—
Hannan, William F., III; and Czuszak, Charles C., 4,343,591, Cl. 415-169.00R.
Dabringhaus, Wilfried; Glotzbach, Helmut; and Voss, Karl, to Agfa-Gevaert Aktiengesellschaft. Apparatus for deflecting a moving web of material. 4,343,422, Cl. 226-197.000.

Daimler-Benz Aktiengesellschaft: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, 4,343,149, Cl. 60-311.000.
Panik, Ferdinand, 4,344,136, Cl. 364-424.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Nanjo, Yasuyuki, 4,343,549, Cl. 355-113.000.

Dakroub, Housan; and Concannon, David J., to Burroughs Corporation. Skip count clock generator. 4,344,036, Cl. 328-61.000.

Dale, Thomas L., to Manville Service Corporation. Attenuation burner for forming fibers. 4,343,640, Cl. 65-16.000.

D'Aloisio, Elio F., to Litton Industrial Products, Inc. Loader for a machine tool. 4,343,590, Cl. 414-753.000.

Dalzell, Rex J.: *See*—
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.

Damico, Pierre; and Jaco, Georges, to Intertechnique. Apparatus for creating gas flow cycles. 4,344,144, Cl. 364-510.000.

Dancsi, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.

Daniel, Jack H. Solar collector assembly. 4,343,294, Cl. 126-424.000.

Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., to Air Products and Chemicals, Inc. Polyvinyl acetate latex impregnated towelette. 4,343,133, Cl. 53-431.000.

Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., to Air Products and Chemicals, Inc. Polyvinyl acetate latex impregnated towelette. 4,343,403, Cl. 206-812.000.

Danko, Michael J.; Randall, Leslie L.; Smith, Ray J.; and Walsh, James E., to Monsanto Company. Moving die rheometer, method of testing materials therewith, and die for use therein. 4,343,190, Cl. 73-846.000.

Dannhorn, Erich; and Baur, Karl, to Linde Aktiengesellschaft. Method of scrubbing acid gases containing polymerizable organic components. 4,343,777, Cl. 423-228.000.

Das, Mihir K.: *See*—
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.

Das, Tapan K.; and Fryer, Martin A., to Plessey Handel und Investments AG. Phase locked loop frequency synthesizer with fine tuning. 4,344,045, Cl. 331-1.00A.

Daubman, Edward A.; and Owler, William G., Jr., to Ametek, Inc. Centrifuge filter. 4,343,700, Cl. 210-232.000.

David Hudson, Inc.: *See*—
Close, Donald, 4,343,841, Cl. 427-386.000.

Davidowich, George; and Miller, Gerald D., to Air Products and Chemicals, Inc. Flushable towelette. 4,343,134, Cl. 53-431.000.

Davidowich, George: *See*—
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,133, Cl. 53-431.000.
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,403, Cl. 206-812.000.

Davidson, Arthur, to International Business Machines Corporation. Distributed array of Josephson devices with coherence. 4,344,052, Cl. 333-222.000.

Davidson, Ronnie D.; and Misencik, John J., to Westinghouse Electric Corp. Ground fault circuit breaker with ground fault trip indicator. 4,344,100, Cl. 361-45.000.

Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., to Chesebrough-Pond's Inc. Video inspection system. 4,344,146, Cl. 364-552.000.

Davis, Robert B., to Union Carbide Corporation. Process for operating a fluidized bed. 4,343,634, Cl. 62-62.000.

Davis, Stephen H., to Water Refining Company, Inc. Convertible dual container storage system. 4,343,699, Cl. 210-190.000.

Dawson, Raymond W.; Stevenson, Anthony W.; and Manners, Ernest, to Dawson, Raymond Winston. Fluid flow measuring apparatus. 4,343,193, Cl. 73-861.610.

Dawson, Raymond Winston: *See*—
Dawson, Raymond W.; Stevenson, Anthony W.; and Manners, Ernest, 4,343,193, Cl. 73-861.610.

Day, Eric: *See*—
Jaliwala, Salim A.; and Day, Eric, 4,343,276, Cl. 123-383.000.

Dayco Corporation: *See*—
Wetzel, Robert E., 4,343,666, Cl. 156-138.000.

DBS, Inc.: *See*—
DeLorenzo, Dana J., 4,343,837, Cl. 427-275.000.

De Ceuster, Jean; and Duprez, Paul, to Interox (Societe Anonyme). Process for reclaiming waste paper. 4,343,679, Cl. 162-4.000.

Decker, Quintin W.; and Marcus, Erich, to Union Carbide Corporation. Lubricant compositions for finishing synthetic fibers. 4,343,616, Cl. 8-115.600.

Deere & Company: *See*—
Miller, Wayne R.; and Von Fumetti, Cyril W., 4,343,697, Cl. 210-90.000.

DeFilippi, Louis J., to UOP Inc. Magnetic support matrix for enzyme immobilization. 4,343,901, Cl. 435-176.000.

Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., to Environmental Elements Corporation. Flow sensing apparatus. 4,343,194, Cl. 73-861.650.

Dehmel, Werner: *See*—
Heitkamp, Herbert; and Dehmel, Werner, 4,343,512, Cl. 299-1.000.

De Keizer, Cornelis: *See*—
Cornelis, Christiaan A.; and De Keizer, Cornelis, 4,343,102, Cl. 37-195.000.

DeLorenzo, Dana J., to DBS, Inc. Tipper for embossed cards and removable cassette for use therewith. 4,343,837, Cl. 427-275.000.

Denhart, Norbert J. Tamper-proof security device for surface mounted electrical outlets and the like. 4,344,114, Cl. 362-147.000.

de Nora, Oronzio; and Spaziante, Placido M., to Oronzio de Nora Impianti Elettrochimici S.p.A. Novel electrolysis cell. 4,343,689, Cl. 204-253.000.

de Nora, Oronzio, to Oronzio de Nora Impianti Elettrochimici S.p.A. Novel electrolysis cell. 4,343,690, Cl. 204-263.000.

De Palma, Ted V.: *See*—
Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., 4,343,074, Cl. 29-157.00R.

Deppe, Gary L.: *See*—
Hire, Charles J.; and Deppe, Gary L., 4,343,974, Cl. 200-243.000.

Design Professionals Financial Corp.: *See*—
Okubo, Shigeo, 4,344,004, Cl. 307-400.000.

Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., to Bussco Engineering, Inc. Bus bar assembly. 4,343,965, Cl. 174-72.00B.

Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt: *See*—
Tersteegen, Johannes, 4,343,331, Cl. 137-625.650.

Devreux, Andre F., to Compagnie Internationale de Participation et d'Investissement "Cipari" S.A. Brewing apparatus having sampling means delivering suspension to fermenting vessel. 4,343,231, Cl. 99-277.200.

de Vries, Jochem J.; and Trees, Ferdinand M., to U.S. Philips Corporation. Shaving apparatus. 4,343,086, Cl. 30-43.600.

De Witt, Paolo; and Tinti, Maria O., to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Carnitinamides of optically active aminoacids. 4,343,947, Cl. 548-344.000.

Dexion-Comino International Limited: *See*—
George, Alan L., 4,343,396, Cl. 198-781.000.

Dickinson, David W.: *See*—
Stanya, Andrew; Franklin, Joseph E.; and Dickinson, David W., 4,343,980, Cl. 219-110.000.

Dickinson, Kay H.: *See*—
Crossley, Roger; and Dickinson, Kay H., 4,343,805, Cl. 424-263.000.

Diebold, Incorporated: *See*—
Anders, Walter G., 4,343,574, Cl. 406-13.000.

Diehr, James R., II; and Lutton, Theodore A., to Federal-Mogul Corporation. Direct digital control of rubber molding presses. 4,344,142, Cl. 364-473.000.

Diggs, Richard E. Method for desalinating water. 4,343,683, Cl. 203-2.000.

Dillon, James E.: *See*—
Bailey, Charles H.; De Palma, Ted V.; and Dillon, James E., 4,343,074, Cl. 29-157.00R.

Dillon, Michael J. Shell reloading machine. 4,343,222, Cl. 86-27.000.

Dillon, Richard S. Promoting circulation of blood. 4,343,302, Cl. 128-24.00R.

Dinsmore, Harold L.; Schwartz, Robert E.; and Tuttle, Willard N., to John Zink Company. Process and apparatus for recovering hydrocarbons from air-hydrocarbon vapor mixtures. 4,343,629, Cl. 55-28.000.

Disch, Karlheinz: *See*—
Kiewert, Eva; Disch, Karlheinz; and Wegner, Jurgen, 4,343,725, Cl. 252-542.000.

Dittmann, Larry E.: *See*—
Bright, Edward J.; Dittmann, Larry E.; and Webster, Van K., 4,343,524, Cl. 339-74.00R.

Dittmann, Norbert: *See*—
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Ditto, Donald R.; and Sparks, John R., to Ditto, Donald R. Apparatus to illuminate a liquid drink. 4,344,113, Cl. 362-101.000.

Diver, James J.: *See*—
Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., 4,343,583, Cl. 414-75.000.

Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., to International Business Machines Corporation. Serial storage interface apparatus for coupling a serial storage mechanism to a data processor input/output bus. 4,344,132, Cl. 364-200.000.

Dixon, Samuel, Jr., to United States of America, Army. Millimeter-wave power limiter. 4,344,047, Cl. 333-17.00L.

Dobbins, Lawrence W.: *See*—
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., 4,344,088, Cl. 358-132.000.

Dodd, John A.; and Lane, Robert L., to Sun Chemical Corporation. Insolubilizers for binders for paper coating compositions. 4,343,655, Cl. 106-214.000.

Dolfin Corporation: *See*—
Borda, William F.; Fry, Thomas M.; and Rist, Charles A., Jr., 4,343,044, Cl. 2-67.000.

Dominico, James W.: *See*—
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,343,391, Cl. 198-438.000.

Donald, Dennis S.; and Lee, Ross A., to Du Pont de Nemours, E. I., and Company. Masked development/image modifier compounds of silver photographic systems. 4,343,893, Cl. 430-401.000.

Dopp, Robert B.: *See*—
Oltman, John E.; and Dopp, Robert B., 4,343,869, Cl. 429-27.000.

Dorr-Oliver Incorporated: *See*—
Jukkola, Walfred W.; and Heath, Thomas D., 4,343,246, Cl. 110-222.000.

Doryokuro Kaku Nenryo Kaihatsu Jigyodan: *See*—
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.

Dose, Curtis R. Playground slide and shelter. 4,343,464, Cl. 272-56.50R.
Douglass, Spivey S.; and Green, Walter L., to United States of America, Energy. Slide system for machine tools. 4,343,206, Cl. 82-2.00R.
Dove, Harold D.: *See*—
Deters, Paul M.; Dove, Harold D.; and Billings, Mickey E., 4,343,965, Cl. 174-72.00B.
Dow Chemical Company, The: *See*—
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,808, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,809, Cl. 424-273.00R.
Broersma, Robert J., Jr.; and Spittka, Gayle A., 4,343,810, Cl. 424-273.00R.
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., 4,343,647, Cl. 71-76.000.
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.
Tefertiller, Nancy B.; and Harris, Robert F., 4,343,919, Cl. 525-278.000.
Dow Corning Corporation: *See*—
Currin, Cedric G.; and Van Wert, Bernard, 4,343,533, Cl. 350-288.000.
Downs, Raymond L.: *See*—
Anderson, Paul R.; Downs, Raymond L.; and Henderson, Timothy M., 4,343,675, Cl. 156-628.000.
Draft Systems, Inc.: *See*—
Fallon, Merton R., 4,343,325, Cl. 137-212.000.
Draftex Development AG: *See*—
Kruschwitz, Werner; and Andrzejewski, Heinz, 4,343,121, Cl. 52-208.000.
Dresser Industries, Inc.: *See*—
Kimmel, Loren L., 4,343,459, Cl. 266-243.000.
Drexler, Ferenc: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Drexler, Jerome; and Bouldin, Eric W., to Drexler Technology Corporation. Multiple layer optical data storage and recording media. 4,343,879, Cl. 430-14.000.
Drexler Technology Corporation: *See*—
Drexler, Jerome; and Bouldin, Eric W., 4,343,879, Cl. 430-14.000.
Drilling Development, Inc.: *See*—
Lyons, William C.; Scurlock, Scot L.; and Zublin, Edward A., 4,343,369, Cl. 175-75.000.
Drixler, Karl, to Chr. Eisele Machinenfabrik GmbH. & Co. KG. Blade protection in tiltable circular saw machines. 4,343,213, Cl. 83-397.000.
Dubicki, Robert. Solar energy system. 4,343,295, Cl. 126-425.000.
Du Bois, Loring E.; and Simpson, Lawrence D., to Western Electric Co., Inc. Apparatus for sorting articles. 4,343,388, Cl. 193-47.000.
DuBose, Ronald A.; and Woolsey, William D., to Agri-Bio Corporation. Method for removing appendages from avian species. 4,343,309, Cl. 128-303.140.
DuBose, Ronald A.; and Woolsey, William D., to Agri-Bio Corporation. Apparatus for removing appendages from avian species. 4,343,310, Cl. 128-303.140.
Dubourguier, Henri-Charles: *See*—
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.
Duewag Aktiengesellschaft: *See*—
Heuer, Wolfgang; and Gerhardinger, Wilhelm, 4,343,507, Cl. 296-208.000.
Duke Power Company: *See*—
Wolf, Herman B., 4,343,999, Cl. 290-2.000.
Duke University: *See*—
Bonaventura, Joseph; and Bonaventura, Celia, 4,343,715, Cl. 252-186.000.
Dumar, William L., Jr.; and Ledlow, Jimmie E., to Boeing Company, The. Ball joint flexible wear ring and seal. 4,343,499, Cl. 285-263.000.
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., to Dow Chemical Company, The. Substituted benzyltrialkylammonium salts and their use as plant growth regulatory control agents. 4,343,647, Cl. 71-76.000.
Dunlop Limited: *See*—
Jackson, William L., 4,343,341, Cl. 152-353.00R.
Popplewell, Frank W., 4,343,757, Cl. 264-221.000.
Du Pont de Nemours, E. I., and Company: *See*—
Breza, Cyril J., deceased; and Schaefer, William E., 4,343,663, Cl. 149-4.000.
Burg, Marion, 4,343,888, Cl. 430-302.000.
Donald, Dennis S.; and Lee, Ross A., 4,343,893, Cl. 430-401.000.
Fernstrom, George A.; Hebeler, Harold H.; Lin, Perry H.; and Moneymaker, Robert R., 4,343,860, Cl. 428-371.000.
Fliedner, Leonard J., Jr., 4,343,812, Cl. 424-274.000.
Heiart, Robert B.; and O'Neil, James W., 4,343,876, Cl. 430-5.000.
Hoene, David J., 4,343,954, Cl. 568-473.000.
Nelson, Thomas L., 4,343,146, Cl. 57-208.000.
Sweetser, Philip B., 4,343,649, Cl. 71-93.000.
Duprez, Paul: *See*—
De Ceuster, Jean; and Duprez, Paul, 4,343,679, Cl. 162-4.000.
Durkoppwerke GmbH: *See*—
Goldbeck, Heinz; and Frodermann, Helmut, 4,343,251, Cl. 112-221.000.
DuRoss, Robert M.; and Stuhler, Robert J., to SCM Corporation. Spacebar touch control apparatus. 4,343,557, Cl. 400-496.000.
Dutt, Bulusu V.; Keramidas, Vassilis G.; and Temkin, Henryk, to Bell Telephone Laboratories, Incorporated. Monitoring indium phosphide surface composition in the manufacture of III–V semiconductor devices. 4,343,674, Cl. 156-601.000.
Duvernay, Roger: *See*—
Tourasse, Marc; and Duvernay, Roger, 4,343,114, Cl. 51-165.710.
Dyckerhoff & Widmann Aktiengesellschaft: *See*—
Wlodkowski, Johann; and Jungwirth, Dieter, 4,343,122, Cl. 52-223.00L.
Dynachem Corporation: *See*—
Reardon, Edward J., Jr., 4,343,885, Cl. 430-177.000.
Dynascan Corporation: *See*—
Schornack, Louis W.; and Goldstein, Richard, 4,344,000, Cl. 307-132.00E.
Dysthe, Sven I. Ski binding. 4,343,486, Cl. 280-615.000.
Dzida, Jan, to Politechnika Lodzka; and Fabryka Samochodow Rolniczych "POLMO". Differential. 4,343,205, Cl. 74-711.000.
E. Beaudrey & Cie, Societe Anonyme: *See*—
Jackson, Philip, 4,343,698, Cl. 210-107.000.
EA Industries, Incorporated: *See*—
McCormick, Lloyd G.; and Score, Robert E., 4,343,131, Cl. 53-397.000.
Eadens, Richard L. Plumb tool. 4,343,093, Cl. 33-373.000.
Easley, Othel D., Jr.; and Hoiseth, Merlin G., to Reactor Services International, Inc. Dumping apparatus and method. 4,343,586, Cl. 414-414.000.
Eastman Kodak Company: *See*—
Lelental, Mark, 4,343,880, Cl. 430-42.000.
Smith, Robert C., Jr.; and McGlen, James A., 4,343,673, Cl. 156-583.400.
Eaton Corporation: *See*—
Keister, Bernard, 4,343,333, Cl. 138-125.000.
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., 4,343,844, Cl. 428-36.000.
Thorson, Clayton W., 4,343,600, Cl. 418-61.00B.
Thorson, Clayton W., 4,343,601, Cl. 418-61.00B.
Eaton, Sargent S., Jr.; and Wooten, David R., to Inmos Corporation. High speed data transfer for a semiconductor memory. 4,344,156, Cl. 365-203.000.
Ecanow, Charles S. Synthetic whole blood and a method of making the same. 4,343,797, Cl. 424-199.000.
Edge, Charles K., to PPG Industries, Inc. Method for attenuating float glass. 4,343,642, Cl. 65-99.500.
Edwards, Alwilda N. Support unit for shelving system. 4,343,245, Cl. 108-111.000.
Edwards, Ben E.; and Marr, Clyde M., to Old-North Manufacturing Company, Inc. Method and apparatus for treating cellulosic products. 4,343,840, Cl. 427-351.000.
Edwards, Robert R., to Cetec Corporation. Wireless microphone. 4,344,184, Cl. 455-95.000.
Edwards, William M.; and Huang, C. Peter, to Pullman Incorporated. Horizontal cross-flow scrubber. 4,343,771, Cl. 422-168.000.
Egan, Richard R.; and Cotrell, Phillip L., to Sherex Chemical Company, Inc. Low irritating high viscosity detergent composition. 4,343,726, Cl. 252-547.000.
Eggen, Ingmar B., to Societe d'Assistance Technique pour Produits Nestle S.A. Cocoa product and process of preparation. 4,343,818, Cl. 426-45.000.
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, to Building Research Institute, Ministry of Construction; Ryoko Electronic Industries Ltd.; and Eko Instruments Trading Co., Ltd. Thermopile and process for manufacturing same. 4,343,960, Cl. 136-225.000.
Ehrhardt, Gerry H.; and Carlson, Gene D., to Frye Copysystems, Inc. Carbonless copy paper system. 4,343,494, Cl. 282-27.500.
Eidetic Images, Inc.: *See*—
Haines, Kenneth A., 4,343,874, Cl. 430-1.000.
Eisele, Bernhard: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Eisend, Ewald: *See*—
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.
Eisert, Wolfgang G., to Gesellschaft fur Strahlen- und Umweltforschung mbH Munchen. Apparatus for counting and classifying particles. 4,343,551, Cl. 356-335.000.
Ek, Jan-Olof: *See*—
Lundblad, Leif J. I.; and Ek, Jan-Olof, 4,343,582, Cl. 414-32.000.
Eko Instruments Trading Co., Ltd.: *See*—
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Electric Power Research Institute, Inc.: *See*—
Lucas, Robert G., 4,343,707, Cl. 210-695.000.
Putt, Ronald A., 4,343,868, Cl. 429-17.000.
Electricite de France (Service National): *See*—
Barbini, Spartacus; and Jolion, Michel, 4,343,979, Cl. 219-10.55A.
Elgin Sweeper Company: *See*—
Hildebrand, Donald L.; and Prescott, Ernest F., 4,343,060, Cl. 15-84.000.
Elliott Turbomachinery Co., Inc.: *See*—
Hannan, William F., III; and Czuszak, Charles C., 4,343,591, Cl. 415-169.00R.
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, to AES Technology Systems, Inc. Method and apparatus for feeding envelopes. 4,343,392, Cl. 198-484.000.
Elston, Lewis W.; and Hurst, David R., to Georgia Tech Research Institute. Method for deodorizing and disinfecting air. 4,343,765, Cl. 422-3.000.

Eltra Corporation: *See*—
Kern, Calvin V.; and Mitton, Bruce W., 4,343,153, Cl. 60-460.000.
Major, Jeffrey T.; Gibson, Nelson S., III; and Young, Jerry L., 4,344,008, Cl. 310-242.000.
Emerich, Jeremiah M.: *See*—
Stevens, Robert E.; Stowe, John H.; and Emerich, Jeremiah M., 4,343,719, Cl. 252-359.0CG.
Emmert, Joseph W.; and Sweeney, Lawrence J., to Addare Corp. Apparatus for handling fluent material. 4,343,394, Cl. 198-616.000.
Enders, George E., to NRM Corporation. Tire building machine. 4,343,671, Cl. 156-401.000.
Endo, Takafumi: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.
Endruhn, Dieter, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Apparatus for manufacturing cable harnesses and printer therefor. 4,343,237, Cl. 101-11.000.
Energy Development Associates, Inc.: *See*—
Schwartz, Stephan; Soderstrom, Roland; and Bjareklint, Ake, 4,343,982, Cl. 219-118.000.
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., to Zenith Radio Corporation. VIR Correction system. 4,344,084, Cl. 358-21.00V.
Engel, Robert W.; and Grube, John R. Playing piece for a board game. 4,343,476, Cl. 273-289.000.
Engelhard Corporation: *See*—
Carr, William F.; and Chen, James M., 4,343,776, Cl. 423-210.000.
Engineering Industries, Inc.: *See*—
Snyder, Robert G.; Clancy, John J.; and Brenneman, Richard S., 4,343,398, Cl. 206-219.000.
Engl, Rupert, to Zanders Feinpapiere AG. Additional device for rolling installations and procedures for rolling of pressure-sensitive materials. 4,343,440, Cl. 242-67.10R.
Enston, Richard G. Equipment for playing gramophone records and method of operation thereof. 4,344,168, Cl. 369-250.000.
Environmental Elements Corporation: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,343,194, Cl. 73-861.650.
Epper, Wolfgang: *See*—
Wolstein, Friedrich; Hoffmann, Egbert; and Epper, Wolfgang, 4,343,780, Cl. 423-321.00R.
Ermilov, Nikolai P.: *See*—
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,343,368, Cl. 173-139.000.
Ernst, Walter; Giger, Hans; and Sigrist, Ernst, to Rieter Machine Works Ltd. Control arrangement for a textile machine. 4,343,144, Cl. 57-86.000.
Erwin, Dennis C.; Bowman, Joseph A.; and Marsalka, Joseph P., to Erwin, Dennis C. Convergence indicator for marine and flight vehicles. 4,344,065, Cl. 340-29.000.
Eschwey, Helmut; Wegemund, Bernd; and Gress, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Process for preparing solution polymerizates of acrylic and methacrylic esters and their use as flow-promoting agents in lacquers. 4,343,728, Cl. 523-456.000.
Esselte Pendaflex Corporation: *See*—
Koch, Ulf; and Nagel, Gerhard, 4,343,238, Cl. 101-85.000.
Etheredge, Benjamin F.; and Larson, Richard I., to General Electric Company. Container for nuclear fuel powders. 4,343,416, Cl. 222-1.000.
Ethyl Corporation: *See*—
Jackisch, Philip F., 4,343,956, Cl. 570-105.000.
Leonard, Erving A., Jr., 4,343,848, Cl. 428-156.000.
Etzel, James E.; and Anand, Praveen, to Purdue Research Foundation. Method of removing heavy metals from industrial waste streams. 4,343,706, Cl. 210-667.000.
Esteco Impianti S.p.A.: *See*—
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.
Euverard, Maynard R.; Heide, Henry A.; and Diver, James J., to Velten & Pulver, Inc. Continuous chain stacker/unstacker. 4,343,583, Cl. 414-75.000.
Evans, Roger C. Frictional resistance type exerciser and method of forming an exercising device. 4,343,466, Cl. 272-133.000.
Everly, Ralph T.: *See*—
Pucci, Donald G.; and Everly, Ralph T., 4,343,731, Cl. 523-427.000.
Exel Oy: *See*—
Abo, Yrjo, 4,343,491, Cl. 280-824.000.
Exergen Corporation: *See*—
Pompei, Francesco, 4,343,182, Cl. 374-31.000.
Exxon Research & Engineering Co.: *See*—
Abbott, David D., 4,343,555, Cl. 400-144.200.
Baker, Rees T. K.; and Chludzinski, James J., 4,343,658, Cl. 148-6.300.
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., 4,343,606, Cl. 431-10.000.
Lundberg, Robert D.; and Makowski, Henry S., 4,343,859, Cl. 428-364.000.
Melchior, Michael T.; Milliman, George E.; and Sartori, Guido, 4,343,716, Cl. 252-192.000.
Pelov, Iran P.; and Penman, Brian R., 4,343,326, Cl. 137-454.000.
Faber, Kurt H. A. E.: *See*—
Lagerholm, Kurt; and Faber, Kurt H. A. E., 4,343,576, Cl. 408-155.000.
Fabryka Samochodow Rolniczych "POLMO": *See*—
Dzida, Jan, 4,343,205, Cl. 74-711.000.
Facchini, Libero. Continuous movement capsule filling and closing machine, particularly for packaging powder or granulated loose products. 4,343,130, Cl. 53-272.000.
Facet Enterprises, Inc.: *See*—
Brown, Ralph V., 4,343,597, Cl. 417-417.000.
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P. Idle stroke braking unit for an impact device. 4,343,368, Cl. 173-139.000.
Fadeeve, Petr Y.: *See*—
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,343,368, Cl. 173-139.000.
Falk, David O.: *See*—
Norton, Charles J.; and Falk, David O., 4,343,363, Cl. 166-281.000.
Fallon, Merton R., to Draft Systems, Inc. Valve assembly and coupler therefor. 4,343,325, Cl. 137-212.000.
Farcy, Paul, to Commissariat a l'Energie Atomique. Particle detector and its production process. 4,343,994, Cl. 250-390.000.
Farina, Attilio: *See*—
Belisomi, Pietro; and Farina, Attilio, 4,344,090, Cl. 358-183.000.
Farley, Dewey R.; and Holden, Vernon K., to Western Electric Co., Inc. Precision trimming device. 4,343,088, Cl. 30-273.000.
Farrell, Robert H.: *See*—
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., 4,344,132, Cl. 364-200.000.
Farris, Paul R.: *See*—
Samuelson, Donald G.; and Farris, Paul R., 4,343,503, Cl. 296-84.00D.
Faryniarz, Joseph R.: *See*—
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Faucillon, Michel, to Allibert, S.A. Container crate that can be stacked or nested. 4,343,400, Cl. 206-507.000.
Faulstich, Marga; and Geiler, Volmar, to Schott Glaswerke. Optical glass having $n_D = 1.63 \pm (1.5 \times 10^{-2})$, $v_D = 59.5 \pm 1.0$ with a high chemical stability and a low tendency to crystallization. 4,343,908, Cl. 501-78.000.
Fausten, Hans-Josef: *See*—
Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, 4,343,756, Cl. 264-216.000.
Fawzi, Mahdi B., to Procter & Gamble Company, The. Topical antimicrobial anti-inflammatory compositions. 4,343,798, Cl. 424-240.000.
Federal-Mogul Corporation: *See*—
Diehr, James R., II; and Lutton, Theodore A., 4,344,142, Cl. 364-473.000.
Fedotov, Vasilij: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Feichtinger, Gerhard: *See*—
Skatsche, Othmar; and Feichtinger, Gerhard, 4,343,271, Cl. 123-198.00E.
Fernstrom, George A.; Hebeler, Harold H.; Lin, Perry H.; and Moneymaker, Robert R., to Du Pont de Nemours, E. I., and Company. Self-crimping polyamide fibers. 4,343,860, Cl. 428-371.000.
Ferrari, Gino. Shoulder garment. 4,343,045, Cl. 2-92.000.
Fettel, Bruce E.; Morris, Paul E.; and Lichte, Leo J., to Shiley, Inc. Electro-chemically machined ring and strut structure for prosthetic heart valves. 4,343,049, Cl. 3-1.500.
Fetterolf Corporation: *See*—
Williams, James W., 3rd; and Fetterolf, John S., 4,343,332, Cl. 138-94.300.
Fetterolf, John S.: *See*—
Williams, James W., 3rd; and Fetterolf, John S., 4,343,332, Cl. 138-94.300.
Fiato, Rocco A.; and Pruett, Roy L., to Union Carbide Corporation. Rhodium-catalyzed oxidation process for producing carboxylic acids. 4,343,950, Cl. 562-531.000.
Fichtel and Sachs AG: *See*—
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.
Fiddler, Maurice K. Portable sun shelter. 4,343,322, Cl. 135-5.00R.
Field, Jasper H.; and Hicks, Robert W., to International Paper Company. Hydrophobic oleophilic wood pulp. 4,343,680, Cl. 162-100.000.
Fifolt, Michael J.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. Method for the preparation of fluoroaniline. 4,343,951, Cl. 564-414.000.
Figge, Irving E. Solar energy collector. 4,343,297, Cl. 126-449.000.
Fijitsu Limited: *See*—
Hatasishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, 4,343,080, Cl. 29-571.000.
Findl, Eugene: *See*—
Conti, James C.; Findl, Eugene; and Wang, William, 4,344,035, Cl. 324-453.000.
Fink, Heiner: *See*—
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.
Firestone Tire & Rubber Company, The: *See*—
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,343,918, Cl. 525-194.000.
McDonald, Peter, 4,343,342, Cl. 152-353.00R.

Fischer, Karlheinz: *See*—
Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, 4,343,241, Cl. 101-231.000.
Fitzgibbons, Gary W., to UARCO Incorporated. Multiple ply adhesive business form. 4,343,492, Cl. 282-11.50R.
Flatte, James W. Hot air furnace. 4,343,290, Cl. 126-110.00E.
Fletcher, Edwin: *See*—
Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, 4,343,116, Cl. 51-284.00R.
Fletcher, Ian M.: *See*—
Shackleton, Ronald; Woodruff, Christopher J.; and Fletcher, Ian M., 4,343,710, Cl. 210-797.000.
Fliedner, Leonard J., Jr., to Du Pont de Nemours, E. I., and Company. Antidepressant 2-amino-and-2-(substituted amino)-cis-hexahydrocarbazoles, compositions and use. 4,343,812, Cl. 424-274.000.
Floyd, Middleton B., Jr.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-503.000.
FMC Corporation: *See*—
Larsen, Gregory J., 4,343,393, Cl. 198-533.000.
Lee, Fui-Tseng H., 4,343,914, Cl. 521-168.000.
Folsom, Jeffrey A. Portable bicycle repair rack. 4,343,404, Cl. 211-17.000.
Ford, John A.: *See*—
Birch, John R.; Cartwright, Terence; and Ford, John A., 4,343,904, Cl. 435-240.000.
Ford, Larry B.: *See*—
United States of America, National Aeronautics and Space Administration; Levin, Harry; and Ford, Larry B., 4,343,772, Cl. 422-200.000.
Ford Motor Company: *See*—
Cairns, Thomas M.; and Connors, David G., 4,343,523, Cl. 339-59.00M.
Fox, David H.; and Kostan, Charles C., 4,343,269, Cl. 123-146.50A.
Rajagopal, Ganesh; and Basrai, Habil S., 4,343,365, Cl. 172-4.000.
Schumacher, Berthold W., 4,344,126, Cl. 363-126.000.
Silver, David S., 4,343,409, Cl. 220-72.000.
Forest, Jean-Pierre; and Rabette, Jean Y. Permanent magnet for a bistable element and bistable element and data display units with at least one such element. 4,344,070, Cl. 340-815.080.
Forster, Siegfried: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.
Fossum, Jerry G.: *See*—
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang, 4,343,962, Cl. 136-255.000.
Foster, Arthur M.: *See*—
Fifolt, Michael J.; and Foster, Arthur M., 4,343,951, Cl. 564-414.000.
Foster, Robert G.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Foufounis, Jean. Automatic record changing apparatus. 4,344,162, Cl. 369-37.000.
Four Star Corporation: *See*—
Mareydt, Ray G., 4,343,419, Cl. 224-326.000.
Fox, David H.; and Kostan, Charles C., to Ford Motor Company. Ignition distributor rotor alignment and lock-down assembly. 4,343,269, Cl. 123-146.50A.
Fracker, Clarence E.: *See*—
Kim, Kwan Y.; and Fracker, Clarence E., 4,343,635, Cl. 65-1.000.
Framatome: *See*—
Bot, Jean-Yves, 4,343,497, Cl. 285-61.000.
Franchina, Antonino, to Wojcik, Karl, a part interest. Solar heating system. 4,343,296, Cl. 126-436.000.
Francis, Philip L., to Allied Corporation. Tilt compensating pendulum for seat mounted retractor. 4,343,444, Cl. 242-107.40A.
Francis, Roderick M., to Stackpole Components Company. Rotatable member rigidly mounted on an undersize shaft. 4,343,564, Cl. 403-362.000.
Francisoud, Jacques; and Ollivier, Christian, to Hospal Sodip SA. Method of producing bundles of hollow fibres potted at their ends. 4,343,668, Cl. 156-172.000.
Franklin Institute, The: *See*—
Chou, Richard C., 4,343,610, Cl. 434-58.000.
Franklin, Joseph E.: *See*—
Stanya, Andrew; Franklin, Joseph E.; and Dickinson, David W., 4,343,980, Cl. 219-110.000.
Franzen, Paul, to Maschinenfabrik Buckau R. Wolf AG. Multi-stage evaporating apparatus with integrated heat regenerating system. 4,343,678, Cl. 159-24.00A.
Frasier, Cline W. Digital air brake control system. 4,344,138, Cl. 364-426.000.
Frentzel, Herman E.: *See*—
Pavlow, Roger; and Frentzel, Herman E., 4,343,603, Cl. 425-114.000.
Friedrich Wilh. Schwing GmbH: *See*—
Schwing, Friedrich; and Schwing, Gerhard, 4,343,598, Cl. 417-517.000.
Frischmann, Peter G.: *See*—
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,343,347, Cl. 164-463.000.
Fritz Eichenauer, Firma: *See*—
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, 4,343,988, Cl. 219-302.000.
Fritz Gegauf AG Bernina-Naehmaschinenfabrik: *See*—
Neuweiler, Armin; and Stillhard, Otmar, 4,343,256, Cl. 112-275.000.
Frodermann, Helmut: *See*—
Goldbeck, Heinz; and Frodermann, Helmut, 4,343,251, Cl. 112-221.000.
Fry, Thomas M.: *See*—
Borda, William F.; Fry, Thomas M.; and Rist, Charles A., Jr., 4,343,044, Cl. 2-67.000.
Frye Copysystems, Inc.: *See*—
Ehrhardt, Gerry H.; and Carlson, Gene D., 4,343,494, Cl. 282-27.500.
Frye, Robert C. Automatic process control device. 4,344,128, Cl. 364-183.000.
Fryer, Martin A.: *See*—
Das, Tapan K.; and Fryer, Martin A., 4,344,045, Cl. 331-1.00A.
Fuchs, Henry O., to United States of America, Treasury. Perforating cylinder. 4,343,215, Cl. 83-670.000.
Fuji Electric Co., Ltd.: *See*—
Watabe, Yasuo, 4,343,695, Cl. 209-212.000.
Fuji Photo Film Co., Ltd.: *See*—
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, 4,343,948, Cl. 549-13.000.
Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, 4,343,894, Cl. 430-528.000.
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.
Sasaoka, Senzo, 4,343,873, Cl. 430-1.000.
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.
Fujimori, Yoshinori: *See*—
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,343,862, Cl. 428-421.000.
Fujimura, Toshiro: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, 4,343,248, Cl. 112-158.00E.
Fujisawa, Kiyoji: *See*—
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, 4,344,087, Cl. 358-127.000.
Fujita, Kazuo: *See*—
Kobayashi, Hisao; and Fujita, Kazuo, 4,343,335, Cl. 140-71.00C.
Fujitsu Limited: *See*—
Ito, Takashi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,343,657, Cl. 148-1.500.
Fujiwara, Masashichi, to Yugen Kaisha Tokyo Kinzoku Seisakusho. Mechanical pencil. 4,343,558, Cl. 401-67.000.
Fujiwara, Toshihide; and Kaneko, Nobutaka, to Olympus Optical Co., Ltd. Sample detector. 4,343,991, Cl. 250-227.000.
Fujiyama, Masaaki: *See*—
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.
Fukuoka, Tatsuhiko; and Takenaka, Akira, to Taiho Kogyo Co., Ltd. Mechanical seals. 4,343,479, Cl. 277-96.200.
Funakoshi, Satoshi: *See*—
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.
Fung, Anthony K.; and Mintzlaff, Roger G., to Sperry Corporation. Apparatus to execute DMA transfer between computing devices using a block move instruction. 4,344,130, Cl. 364-200.000.
Furusawa, Tomotaka: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Furuta, Kenzi, to Olympus Optical Co., Ltd. Recorded-signal position detecting circuit. 4,344,095, Cl. 360-73.000.
Furuta, Osamu: *See*—
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,343,167, Cl. 72-8.000.
Futamase, Tsuyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument. 4,343,218, Cl. 84-1.210.
G.B.R., Ltd.: *See*—
Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., 4,343,129, Cl. 53-206.000.
G. D. Searle & Co.: *See*—
Birch, John R.; Cartwright, Terence; and Ford, John A., 4,343,904, Cl. 435-240.000.
G. Siempelkamp GmbH & Co.: *See*—
Huydts, Eduard J. C., 4,343,236, Cl. 100-214.000.
Gabler, Rolf: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, 4,343,149, Cl. 60-311.000.
Gabriel, Fred C.; and Markle, David A., to Perkin-Elmer Corporation, The. Automatic wafer focusing and flattening system. 4,344,160, Cl. 367-96.000.
Gabriel, William L.: *See*—
Shelton, Lawrence S.; Boigk, Dieter G.; and Gabriel, William L., 4,343,579, Cl. 411-442.000.

Gaddis, Kenneth D.: *See—*
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., 4,343,095, Cl. 34-16.500.

Galda, Edward J.: *See—*
Smith, Ronald B.; Galda, Edward J.; and Nakabayashi, Masahiro, 4,343,984, Cl. 219-146.300.

Gale, Charles. Outboard motor lock. 4,343,161, Cl. 70-14.000.

Gallo, Mario: *See—*
Wirth, Johannes; and Gallo, Mario, 4,343,196, Cl. 73-862.620.

Gallop, Paul M.: *See—*
Lian, Jane B.; Levy, Robert J.; and Gallop, Paul M., 4,343,734, Cl. 260-112.00B.

Galtek Corporation: *See—*
Zitzloff, Wayne D., 4,343,456, Cl. 251-255.000.

Gang Nail Systems, Inc.: *See—*
Moyer, Anthony M.; and Kelly, Robert H., 4,343,580, Cl. 411-468.000.

Ganster, Otto: *See—*
Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, 4,343,339, Cl. 152-209.00R.

Gardiner, Robert F.: *See—*
Randolph, Byron B., Jr., 4,344,034, Cl. 324-329.000.

Gardner, Harry N.; and Petty, John P., to NCR Corporation. Random access memory imaging system. 4,344,091, Cl. 358-213.000.

Garner, Lloyd L.: *See—*
Baker, William, III; Garner, Lloyd L.; and Harris, Charles R., 4,343,371, Cl. 175-329.000.

Garnett, Frederick W.: *See—*
Kelly, James C.; and Garnett, Frederick W., 4,343,255, Cl. 112-262.300.

Gates, Paul D.: *See—*
Beach, Bradley L.; Gates, Paul D.; and Schum, Vaughn J., Jr., 4,343,653, Cl. 106-22.000.

Gates, Walter C., Jr., to Texaco Inc. High temperature solids gasification apparatus with slag reduction means. 4,343,625, Cl. 48-62.00R.

Gauhl, Helmgard: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.

Gauthier, Pierre, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Re-heating cryogenic fluids. 4,343,156, Cl. 62-52.000.

Gavin, Basil F.; MacGill, Robert A.; and Thatcher, Raymond K., to United States of America, Energy. Penning discharge ion source with self-cleaning aperture. 4,344,019, Cl. 315-111.810.

Gavrilin, Vladimir: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Gay, Charles F., to Atlantic Richfield Company. Manufacturing semiconductor wafer devices by simultaneous slicing and etching. 4,343,662, Cl. 148-187.000.

Gay, Walter A., to Olin Corporation. 5-Benzamido-3-trichloromethyl-1,2,4-thiadiazoles and their use as herbicides, fungicides and insecticides. 4,343,945, Cl. 548-128.000.

Geiler, Volmar: *See—*
Faulstich, Marga; and Geiler, Volmar, 4,343,908, Cl. 501-78.000.

Gema AG Apparatebau: *See—*
Lehmann, Ernst, 4,343,436, Cl. 239-696.000.

Gende, Joseph J. Force-receiving and applying device. 4,343,460, Cl. 267-151.000.

General Battery Corporation: *See—*
Nees, John; and Bailey, Dale A., 4,343,872, Cl. 429-245.000.

General Dynamics Corporation Electronics Division: *See—*
McArdle, Beryl L., 4,343,967, Cl. 178-22.190.

General Dynamics, Pomona Division: *See—*
Palmer, John P., 4,343,532, Cl. 350-96.190.

General Electric Company: *See—*
Bradley, Irving; and Hanson, James M., 4,344,120, Cl. 362-349.000.
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., 4,344,054, Cl. 335-169.000.
Collins, Edward J.; Suster, Mary E.; and Weber, Vincent H., 4,344,108, Cl. 362-13.000.
Etheredge, Benjamin F.; and Larson, Richard I., 4,343,416, Cl. 222-1.000.
Graham, Donald E., 4,343,865, Cl. 428-552.000.
Jones, Dwight V., 4,344,122, Cl. 363-23.000.
Kure-Jensen, Jens; and Coppola, Patrick S., 4,343,454, Cl. 251-26.000.
Leslie, Samuel A., 4,344,175, Cl. 375-5.000.
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,343,347, Cl. 164-463.000.
Martin, Robert L., 4,344,116, Cl. 362-226.000.
Pucci, Donald G.; and Everly, Ralph T., 4,343,731, Cl. 523-427.000.
Reynolds, Kenneth R., 4,344,009, Cl. 310-242.000.
Suster, Mary E.; and Weber, Vincent H., 4,344,109, Cl. 362-13.000.

General Foam Plastics Corp.: *See—*
Chase, Ascher, 4,343,842, Cl. 428-8.000.

General Foods Corporation: *See—*
Wood, Robert W.; Hoefler, Andrew C.; and Brody, Deborah S., 4,343,819, Cl. 426-96.000.

General Kap (P.R.) Corporation: *See—*
Csaszar, Ernest J., 4,343,408, Cl. 215-258.000.

Gentry, Dorothy I.; and Ludwig, Walter F., to Gentry, Dorothy I. Printer for imprinting zip codes and the like. 4,343,243, Cl. 101-96.000.

George, Alan L., to Dexion-Comino International Limited. Roller conveyors with clutch drives. 4,343,396, Cl. 198-781.000.

Georgia-Pacific Corporation: *See—*
Greve, Dale R.; and Lehnert, Charles W., 4,343,127, Cl. 52-785.000.

Georgia Tech Research Institute: *See—*
Elston, Lewis W.; and Hurst, David R., 4,343,765, Cl. 422-3.000.

Gerber, Bernard V.: *See—*
Carlon, Hugh R.; and Gerber, Bernard V., 4,343,177, Cl. 73-23.000.

Gerber Scientific Instrument Company, The: *See—*
Berdat, Henry F., 4,343,540, Cl. 354-4.000.

Gerhardinger, Wilhelm: *See—*
Heuer, Wolfgang; and Gerhardinger, Wilhelm, 4,343,507, Cl. 296-208.000.

Gesellschaft fur Biotechnologische Forschung mbH (GBF): *See—*
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, 4,343,735, Cl. 260-112.00R.

Gesellschaft fur Strahlen- und Umweltforschung mbH Munchen: *See—*
Eisert, Wolfgang G., 4,343,551, Cl. 356-335.000.

Gewartowski, Steve A., to UOP Inc. Hydrocarbon isomerization process. 4,343,958, Cl. 585-477.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Heitkamp, Herbert; and Dehmel, Werner, 4,343,512, Cl. 299-1.000.

Ghirga, Marcello: *See—*
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.

Giacometti, Antonio, to Siac Industria Accessori Cavaria S.p.A. Lock with a resilient element acting both as the ejector and as the slider return spring, for bags, brief-cases, shoulder bags and the like. 4,343,162, Cl. 70-67.000.

Gibson, Nelson S., III: *See—*
Major, Jeffrey T.; Gibson, Nelson S., III; and Young, Jerry L., 4,344,008, Cl. 310-242.000.

Giger, Hans: *See—*
Ernst, Walter; Giger, Hans; and Sigrist, Ernst, 4,343,144, Cl. 57-86.000.

Gill, Harold H.: *See—*
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.

Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,343,360, Cl. 166-251.000.

Ginsburgh, Irwin; and Hall, Robert D., to Standard Oil Company (Indiana). Method for controlling underground combustion. 4,343,361, Cl. 166-251.000.

Giovannetti, Fiorello. Clamping device for releasably snap joining two pieces or panels. 4,343,566, Cl. 403-405.000.

Girard, Paul, to Compagnie Internationale pour l' Informatique CII-Honeywell Bull (Societe Anonyme). Device for reducing the time of access to information contained in a memory of an information processing system. 4,344,131, Cl. 364-200.000.

Girardeau, Jean-Pierre: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.

Gitlitz, Melvin H., to M&T Chemicals Inc. Method for combating fungi and mites using certain triorganotin compounds. 4,343,815, Cl. 424-288.000.

Gleinig, Harald; Berger-Lohr, Bernd; and Breig, Kurt, to Bayer Aktiengesellschaft. Process for the preparation of cationic dyestuffs. 4,343,936, Cl. 542-417.000.

Glenn, Joseph G. Liquid tower carburetor. 4,343,282, Cl. 123-523.000.

Glinecke, Hermann R., to Globe Fire Equipment Company. Sprinkler head construction. 4,343,364, Cl. 169-38.000.

Globe Fire Equipment Company: *See—*
Glinecke, Hermann R., 4,343,364, Cl. 169-38.000.

Gloggler, Martin. Side wall structure for an animal stall. 4,343,263, Cl. 119-27.000.

Glotzbach, Helmut: *See—*
Dabringhaus, Wilfried; Glotzbach, Helmut; and Voss, Karl, 4,343,422, Cl. 226-197.000.

Goby, Anne M.: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.

Goby, Genevieve: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.

Goby, Hubert L. J.: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.

Goby, Therese M.: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.

Godbersen, Gary L., to Gomaco, Inc. Method and power transmission system for operating a road planar machine. 4,343,513, Cl. 299-1.000.

Goettert, Edward J.: *See—*
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.

Goh, Atsushi: *See—*
Konno, Kazuhiko; Goh, Atsushi; and Uchimura, Kunio, 4,343,737, Cl. 260-239.0BF.

Gohler, Peter: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Goldbeck, Heinz; and Frodermann, Helmut, to Durkoppwerke GmbH. Sewing machine. 4,343,251, Cl. 112-221.000.

Goldstein, Richard: *See—*
Schornack, Louis W.; and Goldstein, Richard, 4,344,000, Cl. 307-132.60E.

Goletto, Jean: *See—*
Coquard, Jean; and Goletto, Jean, 4,343,743, Cl. 260-404.500.

Golicz, Roman M.: *See—*
Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., 4,343,129, Cl. 53-206.000.

Goloff, Alexander; and Grim, George B., to Caterpillar Tractor Co. Low stress heat exchanger and method of making the same. 4,343,355, Cl. 165-166.000.

Gomaco, Inc.: *See—*
Godbersen, Gary L., 4,343,513, Cl. 299-1.000.

Goodall, Brian L.; and van der Sar, Jacob C., to Shell Oil Company. Olefin polymerization catalyst components and polymerization process. 4,343,721, Cl. 252-429.00B.

Goodyear Aerospace Corporation: *See—*
Uram, John, Jr., 4,343,857, Cl. 428-336.000.
Uram, John R., Jr., 4,343,928, Cl. 528-108.000.

Goodyear Tire & Rubber Company, The: *See—*
Reuter, Rene F., 4,343,343, Cl. 152-359.000.

Goralnik, Charles D. Cut glass window pane. 4,343,758, Cl. 264-254.000.

Gosudarstwennyi Nautschno-Issledowatelskij i Projektnyi Institut Astonoj Promyschlennosti i Produktow Organitscheskogo Sintesa: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Goswami, Jagadish C.; Grimes, Whiteford D.; and Rehder, Richard A., to Stauffer Chemical Company. Polymeric marking film. 4,343,856, Cl. 428-332.000.

Gouet, Philippe; Contrepois, Michel G.; Duvourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, to Institut National de la Recherche Agronomique. Animal vaccine, against colibacillosis, preparation and use. 4,343,792, Cl. 424-92.000.

Gould, Inc.: *See—*
Knapp, Edward J., Jr.; and Perreault, Richard J., 4,344,058, Cl. 337-148.000.
Welk, Steven, 4,343,242, Cl. 102-201.000.

Gradco/Dendoki, Inc.: *See—*
Lawrence, Frederick J., 4,343,463, Cl. 271-293.000.

Graefe, Gernot. Apparatus for preparing high grade fertilizer. 4,343,907, Cl. 435-313.000.

Graham, Donald E., to General Electric Company. Hard metal body and method of making same. 4,343,865, Cl. 428-552.000.

Graham, Scot M., to International Business Machines Corporation. Magnetic tape reel clamp with extended center pole. 4,343,441, Cl. 242-68.100.

Grancher, Pierre: *See—*
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Grant, Anthony, to Spikeville Limited. Liquid de-gassing unit. 4,343,630, Cl. 55-170.000.

Green Cross Corporation, The: *See—*
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.

Green, Walter L.: *See—*
Douglass, Spivey S.; and Green, Walter L., 4,343,206, Cl. 82-2.00R.

Greene, Neil E.: *See—*
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,343,637, Cl. 65-2.000.

Grell, Wolfgang: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.

Gress, Wolfgang: *See—*
Eschwey, Helmut; Wegemund, Bernd; and Gress, Wolfgang, 4,343,728, Cl. 523-456.000.

Greve, Dale R.; and Lehnert, Charles W., to Georgia-Pacific Corporation. Fire door. 4,343,127, Cl. 52-785.000.

Grey-Mac Fitness, Ltd.: *See—*
O'Leary, John B., 4,343,315, Cl. 128-689.000.

Griffin, Ernest E.: *See—*
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Grifhorst, Norman J. Ball rolling game. 4,343,470, Cl. 273-123.00R.

Grim, George B.: *See—*
Belke, William H.; and Grim, George B., 4,343,624, Cl. 48-61.000.
Goloff, Alexander; and Grim, George B., 4,343,355, Cl. 165-166.000.

Grimes, Arthur S.; and Hunter, Robert S. Plant having feed water heating means for nuclear units during plant start up and method of operating the same. 4,343,682, Cl. 376-214.000.

Grimes, Whiteford D.: *See—*
Goswami, Jagadish C.; Grimes, Whiteford D.; and Rehder, Richard A., 4,343,856, Cl. 428-332.000.

Griss, Gerhart: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.

Grobe, Friedrich, to Siemens Aktiengesellschaft. Surface wave component. 4,344,049, Cl. 333-154.000.

Groen Division/Dover Corporation: *See—*
Kells, Edward L.; and Narowski, Robert L., 4,343,292, Cl. 126-378.000.

Groen, Marinus B., to AKZO NV. 2,3-Bis-hydroxybenzyl-derivatives. 4,343,796, Cl. 424-184.000.

Gross, Robert D. Surgical ground detector. 4,343,308, Cl. 128-303.130.

Grounds, Thomas M., to C & T Line Construction, Inc. Wiring apparatus. 4,343,443, Cl. 242-86.700.

Grube, John R.: *See—*
Engel, Robert W.; and Grube, John R., 4,343,476, Cl. 273-289.000.

Gruber, Wolfgang: *See—*
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.

Gruskin, Kenneth A. Simulated camera viewer for video productions. 4,343,534, Cl. 350-319.000.

Gryskiewicz, Gregory A., to UOP Inc. Laser slotted plastic well screen. 4,343,358, Cl. 166-227.000.

Guarracini, Joseph: *See—*
Bleazey, John C.; and Guarracini, Joseph, 4,344,166, Cl. 369-216.000.

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Guenther, Torbett B., to C. D. Sparling Company. Toilet support. 4,343,052, Cl. 4-254.000.

Guillaume, Claude A.: *See—*
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Gulf Research & Development Company: *See—*
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Ryu, Yumi P.; Singerman, Gary M.; and Anglin, James R., 4,343,747, Cl. 260-429.00R.

Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., to Merck & Co., Inc. Hypocholesterolemic fermentation products. 4,343,814, Cl. 424-279.000.

Gunderson, Dennis E., to United States of America, Agriculture. Method and apparatus for edgewise compression testing of flat sheets. 4,343,189, Cl. 73-822.000.

Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., to G.B.R., Ltd. Mechanism of making an envelope. 4,343,129, Cl. 53-206.000.

Guntherodt, Hans-Joachim; Pfluger, Peter; and Kunzi, Hans-Ulrich, to Hoffmann-La Roche Inc. Electro-optical cell. 4,343,537, Cl. 350-357.000.

Guptill, Robert H.; and Penrod, Raymond G., to Guptill, Robert H. Tool for disassembly of automotive universal joints. 4,343,075, Cl. 29-251.000.

Gurries Company, The: *See—*
Gurries, Raymond A., 4,343,514, Cl. 299-37.000.

Gurries, Raymond A., to Gurries Company, The. Resonant tool driving system with gap. 4,343,514, Cl. 299-37.000.

H-C Industries, Inc.: *See—*
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,343,754, Cl. 264-154.000.

Habets, Antonius H. M.; and Krijnen, Henricus C. M., to Oce-Nederland B.V. Corona device. 4,344,104, Cl. 361-230.000.

Habiger, Cyril W., to Caterpillar Tractor Co. Load sensing porting arrangement. 4,343,152, Cl. 60-452.000.

Haddadin, Makhluf J.: *See—*
Issidorides, Costas H.; and Haddadin, Makhluf J., 4,343,942, Cl. 544-354.000.

Hagiwara, Sumio: *See—*
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Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., to American Can Company. Beading die for can bodies. 4,343,174, Cl. 72-349.000.

Haines, Kenneth A., to Eidetic Images, Inc. Method of constructing a hologram on a photoresist detector. 4,343,874, Cl. 430-1.000.

Haley, Howard E.: *See—*
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Ginsburgh, Irwin; and Hall, Robert D., 4,343,361, Cl. 166-251.000.

Hallberg, Frederick C.; and Benedicto, John S. J., to United States of America, National Aeronautics and Space Administration. Crystal cleaving machine. 4,343,287, Cl. 125-23.00R.

Hallerback, Stig L., to Aktiebolaget SKF. Fastening sleeve. 4,343,565, Cl. 403-370.000.

Hallstein, Robert R., to United States of America, Navy. Pressure responsive, manually opening valve. 4,343,327, Cl. 137-464.000.

Hamed, Gary R.: *See*—
Bohm, Georg G. A.; Hamed, Gary R.; and Vescelius, Lee E., 4,343,918, Cl. 525-194.000.

Hamilton, Thomas R. Golf putter with alignment system. 4,343,472, Cl. 273-164.000.

Hamkins, Clark J.: *See*—
Schaefer, David V.; and Hamkins, Clark J., 4,343,386, Cl. 192-54.000.

Hammer, Jacob M.: *See*—
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,343,890, Cl. 430-321.000.

Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicides. 4,343,648, Cl. 71-91.000.

Hanazono, Yoko. Body washing implement for bathing. 4,343,061, Cl. 15-244.00B.

Hanna, Terry J.: *See*—
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,343,637, Cl. 65-2.000.

Hannan, William F., III; and Czuszak, Charles C., to Elliott Turbomachinery Co., Inc. Turbomachine seal system. 4,343,591, Cl. 415-169.00R.

Hanson, James M.: *See*—
Bradley, Irvidg; and Hanson, James M., 4,344,120, Cl. 362-349.000.

Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, to Janome Sewing Machine Co. Ltd. Pattern selecting system of an electronic sewing machine. 4,343,248, Cl. 112-158.00E.

Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, to Janome Sewing Machine Co. Ltd. Lock stitching and over-lock stitching sewing machine. 4,343,250, Cl. 112-168.000.

Hanyu, Susumu, to Janome Sewing Machine Co. Ltd. Free arm sewing machine. 4,343,252, Cl. 112-258.000.

Hara, Akio: *See*—
Yazu, Shuji; and Hara, Akio, 4,343,651, Cl. 75-238.000.

Hara, Hiroshi: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.

Hara, Kazumasa: *See*—
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,343,250, Cl. 112-168.000.

Haraikawa, Tetsuo; and Tamura, Koichi, to Tokico Ltd. Disc brake friction pad retaining means and guide seal. 4,343,381, Cl. 188-73.450.

Harbridge, John B., to Beecham Group Limited. Benzylamino clavulanates and their production. 4,343,806, Cl. 424-272.000.

Harford, Jack R., to RCA Corporation. Variable load impedance gain-controlled amplifier. 4,344,043, Cl. 330-254.000.

Harford, Jack R., to RCA Corporation. Gain-controlled amplifier utilizing variable emitter degeneration and collector load impedance. 4,344,044, Cl. 330-254.000.

Harkness, Samuel D., to United States of America, Energy. Heat transport system. 4,343,761, Cl. 376-148.000.

Harmon, Joseph W.; and Atherton, James H., to RCA Corporation. Low power voltage multiplier circuit. 4,344,003, Cl. 307-296.00A.

Harper, Harold L., Jr. Worn brush indicator. 4,344,072, Cl. 340-648.000.

Harrington, Patrick C.; Levin, Milton I.; Shope, Walter H.; and Wilson, Max K., to Western Electric Company, Inc. Telephone connecting device. 4,343,527, Cl. 339-125.00R.

Harris, Charles R.: *See*—
Baker, William, III; Garner, Lloyd L.; and Harris, Charles R., 4,343,371, Cl. 175-329.000.

Harris Corporation: *See*—
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Harris, David J., to United States of America, Air Force. Composite blade for turbofan engine fan. 4,343,593, Cl. 416-193.00A.

Harris, Robert F.: *See*—
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Hart, Cullen P., to Caterpillar Tractor Co. Tire cooling system and method. 4,343,338, Cl. 152-153.000.

Hartford, Thomas W.: *See*—
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.

Haruch, James, to Spraying Systems Company. Air efficient atomizing spray nozzle. 4,343,434, Cl. 239-390.000.

Harwood, Mervyn G., to U.S. Philips Corporation. Method of making humidity sensors. 4,343,688, Cl. 204-195.00W.

Hasegawa, Tsunao: *See*—
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Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, to Aichi Steel Works Ltd. Roller-dies-processing method and apparatus. 4,343,167, Cl. 72-8.000.

Hashiguchi, Makoto: *See*—
Uozumi, Yasuzi; Hashiguchi, Makoto; and Kikuchi, Fumiaki, 4,343,281, Cl. 123-519.000.

Hashimoto, Mitsuru, to Ricoh Company, Ltd. Electrophotographic bisazo photoconductor. 4,343,882, Cl. 430-58.000.

Hasuike, Fumio: *See*—
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Hataishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, to Fijitsu Limited. Method of producing a semiconductor device. 4,343,080, Cl. 29-571.000.

Hattori, Kiyoshi, to Taisei Kogyo Kabushiki Kaisha. Refrigerator. 4,343,157, Cl. 62-160.000.

Hattori, Shinichiro, to Olympus Optical Co., Ltd. Data transmission system for an endoscope apparatus. 4,343,300, Cl. 128-6.000.

Hattori, Tadashi: *See*—
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Haulotte, Georges, to Creusot-Loire. Platform lift mechanism. 4,343,379, Cl. 187-18.000.

Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, to United States of America, Energy. Multiple stage railgun. 4,343,223, Cl. 89-8.000.

Hay, William D.: *See*—
Wahl, Robert O.; Hay, William D.; and Prohaska, Raymond J., 4,343,092, Cl. 33-169.00R.

Hayashi, Tadashi; and Nomura, Setsuo, to Hitachi, Ltd. X-ray tubes. 4,344,011, Cl. 313-57.000.

Haykin, Simon: *See*—
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Healy, James W. Fuel dispensing nozzle. 4,343,337, Cl. 141-226.000.

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Hebeler, Harold H.: *See*—
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Hebert, John R., Jr.; Silveira, Joseph H.; and Herzig, Robert W., to Sprague Electric Company. Method for controlling etching of electrolytic capacitor foil. 4,343,686, Cl. 204-129.200.

Heckler, Jay W., to Upjohn Company, The. Use of derivatives of 6α-methylprednisolone for the prevention or reduction of adriamycin-induced cardiotoxicity. 4,343,799, Cl. 424-243.000.

Hefftler, Victor: *See*—
Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, 4,343,241, Cl. 101-231.000.

Hegger, Josef, to Claas OHG. Sugar-cane harvester. 4,343,140, Cl. 56-17.100.

Heiart, Robert B.; and O'Neil, James W., to Du Pont de Nemours, E. I., and Company. Dot-enlargement process for photopolymer litho masks. 4,343,876, Cl. 430-5.000.

Heide, Henry A.: *See*—
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Heinz, Lothar, to Siemens Medical Laboratories, Inc. Collimator assembly for an electron accelerator. 4,343,997, Cl. 250-505.100.

Heitkamp, Herbert; and Dehmel, Werner, to Gewerkschaft Eisenhutte Westfalia. Cutter drive regulation apparatus for a tunnelling machine. 4,343,512, Cl. 299-1.000.

Heling, Dennis H.; Lyszczarz, Walter; and Sposite, Frank J., to Lear Siegler, Inc. Latch mechanism for vehicle seat convertible to bed. 4,343,508, Cl. 297-114.000.

Heller, Adam; Lewerenz, Hans J.; and Miller, Barry, to Bell Telephone Laboratories, Incorporated. Semiconductor liquid junction photocell having a P-type photoactive electrode. 4,343,870, Cl. 429-111.000.

Heller, Adam; and Vadimsky, Richard G., to Bell Telephone Laboratories, Incorporated. Sensitizing bath for silver containing resist. 4,343,887, Cl. 430-272.000.

Heller, Roger A.: *See*—
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Helten, Manfred: *See*—
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Henderson, Timothy M.: *See*—
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Henkel Kommanditgesellschaft auf Aktien: *See*—
Eschwey, Helmut; Wegemund, Bernd; and Gress, Wolfgang, 4,343,728, Cl. 523-456.000.

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Kiewert, Eva; Disch, Karlheinz; and Wegner, Jurgen, 4,343,725, Cl. 252-542.000.

Henkelmann, Gary L., to W. R. Grace & Co. Catalytic solvent vapor incinerating apparatus. 4,343,769, Cl. 422-109.000.

Henthorn, Timothy K.: *See*—
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Herbert, William J.: *See*—
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Hercules Incorporated: *See*—
Maslanka, William W.; and Spence, Gavin G., 4,343,729, Cl. 524-529.000.
Herden, Werner; and Neu, Hans, to Robert Bosch GmbH. Apparatus for furnishing a signal indicative of the load of an internal combustion engine. 4,343,180, Cl. 73-115.000.
Herzig, Robert W.: *See*—
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Heuer, Wolfgang; and Gerhardinger, Wilhelm, to Duewag Aktiengesellschaft. Mounting arrangement for a ventilation or heating system for vehicles. 4,343,507, Cl. 296-208.000.
Hi-Stat Manufacturing Company, Inc.: *See*—
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Hibino, Hidehiko: *See*—
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Hickmann, Horst R. Veterinary inhalation therapy apparatus. 4,343,304, Cl. 128-200.140.
Hicks, Robert W.: *See*—
Field, Jasper H.; and Hicks, Robert W., 4,343,680, Cl. 162-100.000.
Higgs, Robert H.; and Jones, John M., to Coal Industry (Patents) Limited. Device for rotating a body. 4,343,515, Cl. 299-75.000.
Hildebrand, Donald L.; and Prescott, Ernest F., to Elgin Sweeper Company. Hydraulic control system for a street sweeper. 4,343,060, Cl. 15-84.000.
Hilfiker Pipe Co.: *See*—
Hilfiker, William K., 4,343,572, Cl. 405-284.000.
Hilfiker, William K., to Hilfiker Pipe Co. Apparatus and method for anchoring the rigid face of a retaining structure for an earthen formation. 4,343,572, Cl. 405-284.000.
Hiraiwa, Nobuo: *See*—
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.
Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, to Kyowa Hakko Kogyo Co., Ltd. Cephalosporin analogs. 4,343,943, Cl. 546-183.000.
Hire, Charles J.; and Deppe, Gary L., to Hi-Stat Manufacturing Company, Inc. Multi-circuit electrical switch. 4,343,974, Cl. 200-243.000.
Hiroe, Kazuhito: *See*—
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Hishinuma, Takehiro; and Tsuchida, Yutaka, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Shearing device for ingots. 4,343,212, Cl. 83-303.000.
Hitachi, Ltd.: *See*—
Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, 4,344,129, Cl. 364-200.000.
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Kousokabe, Hirokatu, 4,343,599, Cl. 418-55.000.
Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.
Murakami, Kanji; Wajima, Motoyo; and Ishikawa, Tetsuo, 4,343,659, Cl. 148-6.300.
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Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,344,025, Cl. 318-729.000.
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Hobson Bros., Inc.: *See*—
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Hobson, Ervin J.; and Leitmann, William J., to Hobson Bros., Inc. Quick disconnect assembly. 4,343,526, Cl. 339-90.00R.
Hodosh, Milton. Compound and method for preserving dental pulp. 4,343,608, Cl. 433-224.000.
Hoechst Aktiengesellschaft: *See*—
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Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, 4,343,742, Cl. 349-380.000.
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Hoefke, Wolfgang: *See*—
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Hoene, David J., to Du Pont de Nemours, E. I., and Company. Formaldehyde process. 4,343,954, Cl. 568-473.000.
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Hofbauer, Peter, to Volkswagenwerk Aktiengesellschaft. Device for automatic actuation of an automobile clutch. 4,343,387, Cl. 192-0.076.
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Hoffmann, Egbert: *See*—
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Hoffmann-La Roche Inc.: *See*—
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Townsend, John M.; and Valentine, Donald, Jr., 4,343,741, Cl. 548-412.000.
Hoffmann, Roland; and Panofski, Ernst, to Patent-Treuhand-Gesellschaft fur elektrische Gluhampen mbH. Fluorescent lamp with silicon dioxide coating. 4,344,016, Cl. 313-489.000.
Hofmann, Rudolf, to Bauer Kaba AG. Cylinder lock with associated flat key. 4,343,166, Cl. 70-358.000.
Hoiseth, Merlin G.: *See*—
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Hoki, Tsuneo; and Matsuki, Yutaka, to Asahi-Dow Limited. Foamed thermoplastic resin articles and foamable compositions and foaming processes for the preparation thereof. 4,343,911, Cl. 521-88.000.
Holcroft & Co.: *See*—
Lippert, Charles; Nowak, Leonard G.; and Shefsiek, Paul K., 4,343,395, Cl. 198-781.000.
Holden, Vernon K.: *See*—
Farley, Dewey R.; and Holden, Vernon K., 4,343,088, Cl. 30-273.000.
Holec, N.V.: *See*—
Brinkman, Willem, 4,343,275, Cl. 123-382.000.
Holiday, Paul R.; and Patterson, Robert J., II, to United Technologies Corporation. Method for producing metal powder. 4,343,750, Cl. 264-8.000.
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Murphy, Richard F., 4,343,407, Cl. 213-51.000.
Hollandsworth, Larry A., to Caterpillar Tractor Co. Muffler mounting structure. 4,343,374, Cl. 180-69.00R.
Hollis, Jack L., to Carlisle Tire & Rubber Company, Div. of Carlisle Corp. Method for making an indefinite length composite sheet of very large predetermined width from indefinite length sheet stock of relatively small width. 4,343,667, Cl. 156-157.000.
Holly, James A. Method and apparatus for unidirectional formation of a plug-formed patty with cleanout feature. 4,343,068, Cl. 17-45.000.
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Assen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.
Holmsen, Theodore W.: *See*—
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., 4,343,647, Cl. 71-76.000.
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Holtkamp, Reinhold. Capillary disc and support therefor. 4,343,109, Cl. 47-81.000.
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Adams, James H.; Rich, Dennis J.; and Holtz, Frederick C., Jr., 4,343,909, Cl. 501-98.000.
Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., to Westinghouse Electric Corp. Power capacitor structure and method of assembly. 4,344,105, Cl. 361-328.000.
Hon, David T., to Hughes Aircraft Company. Self-regenerative laser oscillator-amplifier. 4,344,042, Cl. 330-4.300.
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Uozumi, Yasuzi; Hashiguchi, Makoto; and Kikuchi, Fumiaki, 4,343,281, Cl. 123-519.000.
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Ballinger, Dale O., 4,344,159, Cl. 367-87.000.
Honeywell Information Systems Inc.: *See*—
Leger, Laurie J., 4,343,530, Cl. 339-220.00R.
Hoofe, William J., III. Interlocking panels. 4,343,126, Cl. 52-313.000.
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Fifolt, Michael J.; and Foster, Arthur M., 4,343,951, Cl. 564-414.000.
Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Disposable article. 4,343,783, Cl. 424-28.000.
Horinishi, Katsumi, to West Electric Co., Ltd. Electronic flash device capable of automatic flash duration adjustment. 4,344,020, Cl. 315-241.00P.
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Hoskin, William J.: *See*—
Ross, Donald N.; Bodnar, Endre; and Hoskin, William J., 4,343,048, Cl. 3-1.500.
Hospal Sodip SA: *See*—
Francisoud, Jacques; and Ollivier, Christian, 4,343,668, Cl. 156-172.000.
Hough, James W.: *See*—
Gunther, William H., Jr.; Golicz, Roman M.; and Hough, James W., 4,343,129, Cl. 53-206.000.
Houston, Robert D., to Xerox Corporation. Integrated waveguide drop sensor array and method for ink jet printing system. 4,344,078, Cl. 346-75.000.

Huang, C. Peter: *See—*
Edwards, William M.; and Huang, C. Peter, 4,343,771, Cl. 422-168.000.

Huber, William D., to Sperry Corporation. Delay and optimum amplitude equalizers for a readback circuit. 4,344,093, Cl. 360-45.000.

Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf. Anode disc for a rotary-anode X-ray tube. 4,344,012, Cl. 313-60.000.

Hudgins, Jerry L., to United States of America, National Aeronautics and Space Administration. Apparatus for sequentially transporting containers. 4,343,584, Cl. 414-222.000.

Hufton, Peter F., to Northern Engineering Industries Limited. Apparatus for expanding tubular members. 4,343,170, Cl. 72-61.000.

Hughes Aircraft Company: *See—*
Bleha, William P., Jr., 4,343,535, Cl. 350-342.000.
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Kinzer, Donald L., 4,343,372, Cl. 175-374.000.

Hullen, Helmut; and Knoth, Werner-Dieter, to Veba-Glas AG. Apparatus for making hollow glassware and method of operating the apparatus. 4,343,644, Cl. 65-241.000.

Hung, Pai-Yen. System for removing sludge from dam reservoir. 4,343,696, Cl. 210-85.000.

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Schmidt, Paul J.; and Hung, William M., 4,343,493, Cl. 282-27.500.

Hungerford, William R.: *See—*
McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., 4,344,127, Cl. 364-130.000.

Hunter, Robert S.: *See—*
Grimes, Arthur S.; and Hunter, Robert S., 4,343,682, Cl. 376-214.000.

Hunter, Walter D., to Texaco Development Corp. Process for secondary recovery. 4,343,712, Cl. 252-8.55D.

Hunziker, John, Jr., to United States of America, Health and Human Services. Laboratory rat feeder. 4,343,262, Cl. 119-18.000.

Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, to Boehringer Ingelheim GmbH. 2[3-(4-Chlorophenyl)-1,2-dimethyl-1H-indol-5-yloxy]-2-methyl propanoic acid and hyperlipidemic or atheosclerotic use thereof. 4,343,811, Cl. 424-274.000.

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Elston, Lewis W.; and Hurst, David R., 4,343,765, Cl. 422-3.000.

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IHC Holland N.V.: *See—*
Cornelis, Christiaan A.; and De Keizer, Cornelis, 4,343,102, Cl. 37-195.000.

Ilich, Daniel F. Support frame and method of making and packaging the same. 4,343,135, Cl. 53-444.000.

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Lance, Mark A., 4,343,066, Cl. 17-1.00R.

Imperial Chemical Industries Limited: *See—*
Laidler, Dale A.; and Milner, David J., 4,343,935, Cl. 542-414.000.

Inada, Akio, to Hitachi, Ltd. High pressure metal vapor discharge lamp. 4,344,018, Cl. 315-47.000.

Inanaga, Takugi: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.

Indech, Robert. Subcutaneous neural stimulation or local tissue destruction. 4,343,301, Cl. 128-24.00A.

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Belisomi, Pietro; and Farina, Attilio, 4,344,090, Cl. 358-183.000.

Ingersoll-Rand Company: *See—*
Aden, Michael L., 4,343,516, Cl. 299-86.000.
Nelson, Kenneth R., 4,343,502, Cl. 292-356.000.

Inmos Corporation: *See—*
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Inoue, Kiyoshi, 4,343,111, Cl. 51-59.0SS.

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Institut National de la Recherche Agronomique: *See—*
Gouet, Philippe; Contrepois, Michel G.; Dubourguier, Henri-Charles; Girardeau, Jean-Pierre; Goby, Hubert L. J.; Goby, Therese M.; Goby, Anne M.; and Goby, Genevieve, 4,343,792, Cl. 424-92.000.

Institutul de Cercetari si Proiectari Pentru Petrol si Gaze: *See—*
Turta, Alexandru; and Cucuiat, Marius, 4,343,362, Cl. 166-267.000.

Instrumentation Laboratory: *See—*
Legg, Kenneth D., 4,343,705, Cl. 210-637.000.

Inter-Hydraulik GmbH, Firma: *See—*
Ribeiro de Almeida, A. A., 4,343,226, Cl. 91-171.000.

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Lundgren, Gillis, 4,343,509, Cl. 297-232.000.

Inter Innovation AB: *See—*
Lundblad, Leif J. I.; and Ek, Jan-Olof, 4,343,582, Cl. 414-32.000.

Interatom Internationale Atomreaktorbau GmbH: *See—*
Schnapp, Herbert, 4,343,186, Cl. 73-649.000.

Interco Incorporated: *See—*
Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., 4,343,421, Cl. 226-113.000.

International Business Machines Corporation: *See—*
Beach, Bradley L.; Gates, Paul D.; and Schum, Vaughn J., Jr., 4,343,653, Cl. 106-22.000.
Binnig, Gerd; and Rohrer, Heinrich, 4,343,993, Cl. 250-306.000.
Davidson, Arthur, 4,344,052, Cl. 333-222.000.
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., 4,344,132, Cl. 364-200.000.
Graham, Scot M., 4,343,441, Cl. 242-68.100.
Laurer, George J.; and Pierce, Charles M., 4,344,152, Cl. 364-900.000.
Lin, Shu; and Yu, Philip S., 4,344,171, Cl. 371-35.000.
Prame, Eric S., 4,344,069, Cl. 340-365.00S.
Seifert, Hans-Gordon, 4,343,239, Cl. 101-93.340.
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Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,343,791, Cl. 424-84.000.

International Harvester Co.: *See—*
Lark, Wayne W.; Jennings, Marvin D.; and Madeksho, Marvyn J., 4,343,414, Cl. 221-13.000.

International Paper Company: *See—*
Field, Jasper H.; and Hicks, Robert W., 4,343,680, Cl. 162-100.000.

Internationale Octrooi Maatschappij "Octropa" BV: *See—*
Prooi, Jacob J.; Sep, Waltherus J.; and Westerhof, Wilhelmina, 4,343,932, Cl. 528-303.000.

Interox (Societe Anonyme): *See—*
De Ceuster, Jean; and Duprez, Paul, 4,343,679, Cl. 162-4.000.

Intertechnique: *See—*
Damico, Pierre; and Jaco, Georges, 4,344,144, Cl. 364-510.000.

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Persson, Nils C., 4,343,051, Cl. 4-111.100.

Isaacson, Robert, to Connecticut Valley Paper & Envelope Co., Inc. Envelope-display device and method. 4,343,105, Cl. 40-155.000.

Isaka, Takenobu: *See—*
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, 4,344,087, Cl. 358-127.000.

Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, to Toyo Boseki Kabushiki Kaisha. Composite film and packaging material of polypropylene base and surface polymer composition. 4,343,852, Cl. 428-216.000.

Ishida, Yoshikatsu: *See—*
Kunita, Yoshisuke; Ishida, Yoshikatsu; and Kuwabara, Masaharu, 4,343,469, Cl. 273-185.00A.

Ishikawa, Hajime: *See—*
Ito, Takashi; Ishikawa, Hajime; and Shinoda, Masaichi, 4,343,657, Cl. 148-1.500.

Ishikawa, Norikatsu: *See—*
Ohnaka, Hidemi; and Ishikawa, Norikatsu, 4,343,277, Cl. 123-389.000.

Ishikawa, Tetsuo: *See—*
Murakami, Kanji; Wajima, Motoyo; and Ishikawa, Tetsuo, 4,343,659, Cl. 148-6.300.

Ishikawa, Yoshinobu: *See—*
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.

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Hishinuma, Takehiro; and Tsuchida, Yutaka, 4,343,212, Cl. 83-303.000.

Ishiodori, Makoto, to Sony Corporation. Apparatus for recovering a frequency-converted chrominance component that is substantially free of cross-talk components. 4,344,082, Cl. 358-8.000.

Issidorides, Costas H.; and Haddadin, Makhluf J., to Research Corporation. Quinoxaline derivatives. 4,343,942, Cl. 544-354.000.

Itaya, Nobushige: *See—*
Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, 4,343,953, Cl. 568-347.000.

Ito, Fumiyuki: *See—*
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.

Ito, Takashi; Ishikawa, Hajime; and Shinoda, Masaichi, to Fujitsu Limited. Process for producing a semiconductor device. 4,343,657, Cl. 148-1.500.

ITW Limited: *See—*
Meeks, Alan M. G., 4,343,501, Cl. 292-336.300.

Ivac Corporation: *See—*
Knute, Wallace L., 4,343,185, Cl. 374-158.000.

Iwasawa, Tadashi. Pickup device. 4,344,167, Cl. 369-247.000.

Iwata, Toshiharu; and Hattori, Tadashi, to Nippon Soken, Inc. Ignition spark plug. 4,344,014, Cl. 313-143.000.

Iyer, Sury, to United States of America, Army. Production of polymer bonded nitramine explosive and propellant compositions. 4,343,664, Cl. 149-11.000.

Izumi, Toshiaki: *See—*
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.

Jackisch, Philip F., to Ethyl Corporation. Stabilization dibromostyrene. 4,343,956, Cl. 570-105.000.

Jackson, John C.: *See—*
Anderson, Alan P.; and Jackson, John C., 4,344,030, Cl. 324-58.50B.

Jackson, Philip, to E. Beaudrey & Cie, Societe Anonyme. Water intake. 4,343,698, Cl. 210-107.000.

Jackson, William L., to Dunlop Limited. Pneumatic tire and wheel rim assemblies. 4,343,341, Cl. 152-353.00R.

Jaco, Georges: *See—*
Damico, Pierre; and Jaco, Georges, 4,344,144, Cl. 364-510.000.

Jacobson, Donald R., to Radiation Measurements, Inc. Measuring tool for computer assisted tomographic scanner. 4,344,183, Cl. 378-207.000.

Jacobson, Peter E.; and Rustenburg, Conrad M., to Sperry Corporation. Rotor structure for gyroscopic apparatus. 4,343,203, Cl. 74-5.00R.

Jaliwala, Salim A.; and Day, Eric, to Cummins Engine Company, Inc. Turbocharger boost feedback control for engine governor. 4,343,276, Cl. 123-383.000.

Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, 4,343,248, Cl. 112-158.00E.
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,343,250, Cl. 112-168.000.
Hanyu, Susumu, 4,343,252, Cl. 112-258.000.
Takenoya, Hideaki; and Shomura, Eiichi, 4,343,249, Cl. 112-158.00E.

Janssen, Daniel J. G.: *See—*
van de Meeberg, Leendert; and Janssen, Daniel J. G., 4,344,149, Cl. 364-724.000.

Jarret, Jacques H.: *See—*
Jarret, Jean M.; and Jarret, Jacques H., 4,343,154, Cl. 60-527.000.

Jarret, Jean M.; and Jarret, Jacques H. Motive device for converting a variation in temperature into mechanical energy. 4,343,154, Cl. 60-527.000.

Jarrett, Tracy C. Apparatus for grinding metallographic specimens. 4,343,112, Cl. 51-131.300.

Jaulmes, Christian, to Atteliers de la Motobecane. Device for displaying the level of fluid contained in a tank. 4,343,184, Cl. 73-299.000.

Jegorow, Aleksander: *See—*
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Jencks, Charles L.: *See—*
Castonguay, Roger N.; Jencks, Charles L.; and Clickner, Peter P., 4,344,054, Cl. 335-169.000.

Jendrzejczyk, Joseph A., to United States of America, Energy. Fluid force transducer. 4,343,198, Cl. 73-862.650.

Jenner, Michael R.; and Waite, David, to Talres Development (N.A.) N.V. Crystalline 4,1',6'-trichloro-4,1',6'-trideoxy-galactosucrose. 4,343,934, Cl. 536-122.000.

Jennings, Marvin D.: *See—*
Lark, Wayne W.; Jennings, Marvin D.; and Madeksho, Marvyn J., 4,343,414, Cl. 221-13.000.

Jentzsch, Arndt: *See—*
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Jespersen, Chris A., to C. R. Bard, Inc. Electronic urine flow monitor. 4,343,316, Cl. 128-771.000.

Jochems, Pieter J. W., to U.S. Philips Corporation. Self-registering method of manufacturing an insulated gate field-effect transistor. 4,343,079, Cl. 29-571.000.

Jodts, Richard J.: *See—*
Ocker, Klaus F.; Jodts, Richard J.; and Pfeiffer, Robert C., 4,343,445, Cl. 242-107.700.

Johansson, Sigvard N.: *See—*
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John Wyeth & Brother Limited: *See—*
Crossley, Roger; and Dickinson, Kay H., 4,343,805, Cl. 424-263.000.

John Zink Company: *See—*
Dinsmore, Harold L.; Schwartz, Robert E.; and Tuttle, Willard N., 4,343,629, Cl. 55-28.000.

Johne, Hans: *See—*
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Johnson, Allen M.: *See—*
Wells, David L.; and Johnson, Allen M., 4,343,595, Cl. 417-225.000.

Johnson, Donald W., to United States of America, Air Force. All radial construction for continuous ribbon parachutes. 4,343,448, Cl. 244-145.000.

Johnson, George A.: *See—*
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,343,783, Cl. 424-28.000.

Johnson, Junior L.; and Pikey, Leonard E., to A. O. Smith-Inland, Inc. Fiber reinforced epoxy resin article. 4,343,843, Cl. 428-36.000.

Johnson, Marvin M., to Phillips Petroleum Company. Method of removing contaminant from a feedstock stream. 4,343,693, Cl. 208-244.000.

Johnson-Progress, Ltd.: *See—*
Jones, Paul F., 4,343,235, Cl. 100-204.000.

Johnson, Richard H.: *See—*
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.

Johnston, David A.: *See—*
Johnston, Norman H.; and Johnston, David A., 4,343,485, Cl. 280-609.000.

Johnston, Loren B., to RCA Corporation. System for compensating for transfer characteristic variations of electron guns. 4,344,021, Cl. 315-383.000.

Johnston, Norman H.; and Johnston, David A., to Ski World, Inc. Reverse camber ski. 4,343,485, Cl. 280-609.000.

Jolion, Michel: *See—*
Barbini, Spartacus; and Jolion, Michel, 4,343,979, Cl. 219-10.55A.

Jones, Allen P.; and Cunningham, Charles J., to Union Carbide Corporation. Method and apparatus for treating open-weave substrates with foam. 4,343,835, Cl. 427-209.000.

Jones, Darrell L.: *See—*
Nobileau, Philippe C.; and Jones, Darrell L., 4,343,495, Cl. 285-23.000.

Jones, Dwight V., to General Electric Company. Current sourced inverter with saturating output transformer. 4,344,122, Cl. 363-23.000.

Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., to Commonwealth Scientific and Industrial Research Organization. Mothproofing agents. 4,343,618, Cl. 8-128.00R.

Jones, John M.: *See—*
Higgs, Robert H.; and Jones, John M., 4,343,515, Cl. 299-75.000.

Jones, Paul F., to Johnson-Progress, Ltd. Filter presses. 4,343,235, Cl. 100-204.000.

Jonker, Roelof R.; and Webb, Dennis A., to N.I.S.E., Inc. Smoothing device for scan lines of a photographed CRT display. 4,343,542, Cl. 354-76.000.

Joshi, Ashok V.; and Margalit, Nehemiaha, to Ray-O-Vac Corporation. Process for treating cathode material. 4,343,714, Cl. 252-182.100.

JSJ Corporation: *See—*
Osborn, Charles, 4,343,202, Cl. 74-476.000.

Judosha Kiki Co., Ltd.: *See—*
Ohe, Takeshi; and Okamoto, Haruo, 4,343,324, Cl. 137-117.000.

Jukkola, Walfred W.; and Heath, Thomas D., to Dorr-Oliver Incorporated. Slurry coal feed system for fluidized bed reactor. 4,343,246, Cl. 110-222.000.

Julia, Marc; and Saussine, Lucien, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the preparation of unsaturated sulphones. 4,343,952, Cl. 568-28.000.

Junger, Eugene E., to Applied Power Inc. Flow sensing check valve. 4,343,328, Cl. 137-491.000.

Jungwirth, Dieter: *See—*
Wlodkowski, Johann; and Jungwirth, Dieter, 4,343,122, Cl. 52-223.00L.

Junker, Frank: *See—*
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Jurecic, Anton; and Romano, James V., to Pennwalt Corporation. Dispenser for dental sealant. 4,343,418, Cl. 222-386.000.

Kabushiki Kaisha Sankyo Seki Seisakusho: *See—*
Komatsu, Fumito; and Orii, Makoto, 4,343,221, Cl. 84-404.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Wakai, Yoichi, 4,344,161, Cl. 368-69.000.

Kadin, Saul B., to Pfizer Inc. Carboxamide compounds as SRS-A antagonists. 4,343,813, Cl. 424-274.000.

Kagawa, Tokiyoshi, to Sanwa Shutter Corporation. Apparatus for manufacturing a slat for a shutter. 4,343,171, Cl. 72-181.000.

Kahlert, Peter: *See—*
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Kahling, Joachim: *See—*
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.

Kahovec, Jaroslav, to Cexkoslovenska akademie ved. Polymeric polydentate complexons and a method for their preparation. 4,343,920, Cl. 525-328.200.

Kaise Electric Works Ltd.: *See—*
Oishi, Yasuo; and Ushimaru, Imao, 4,344,101, Cl. 361-75.000.

Kaji, Kiyokane, to Toyota Jidosha Kogyo Kabushiki Kaisha. Sensor with inner protective chamber. 4,343,187, Cl. 73-654.000.

Kalaus, Gyorgy: *See—*
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.

Kalfhaus, Reinhard. System for precise regulation of the output voltage or current of a push-pull inverter having large variations of input voltage. 4,344,125, Cl. 363-80.000.

Kalfoglou, George, to Texaco Inc. Surfactant fluid suitable for use in waterflood oil recovery method. 4,343,711, Cl. 252-8.55D.

Kaloff, Hans: *See—*
Weber, Hans-Leo; Reese, Eckart; Kaloff, Hans; and Fausten, Hans-Josef, 4,343,756, Cl. 264-216.000.

Kalsec, Inc.: *See—*
Todd, Paul H., Jr.; and Haley, Howard E., 4,343,823, Cl. 426-250.000.

Kaltenegger, Benno. Cartridge magazine for pistols. 4,343,107, Cl. 42-7.000.

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Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.

Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, to Pioneer Electronic Corporation. Cassette tape player. 4,344,098, Cl. 360-96.600.

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Tochikubo, Hiroo; and Kanai, Akira, 4,343,829, Cl. 427-35.000.
Kanamori, Terutoshi: *See*—
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,343,638, Cl. 65-2.000.
Kanao, Shiro. Method and apparatus for producing tube. 4,343,672, Cl. 156-428.000.
Kanda, Hiroshi: *See*—
Takada, Moritaka; and Kanda, Hiroshi, 4,343,825, Cl. 426-570.000.
Kane, Dan S. Sofa bed combination. 4,343,054, Cl. 5-18.00R.
Kaneko, Nobutaka: *See*—
Fujiwara, Toshihide; and Kaneko, Nobutaka, 4,343,991, Cl. 250-227.000.
Kanno, Masashi: *See*—
Tanabe, Kenzo; Suzuki, Junji; and Kanno, Masashi, 4,344,188, Cl. 455-326.000.
Kao Soap Company, Ltd.: *See*—
Kobayashi, Hisao; and Fujita, Kazuo, 4,343,335, Cl. 140-71.00C.
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Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,343,937, Cl. 544-021.000.
Karlicek, Robert F. Frequency regulator for synchronous generators. 4,344,027, Cl. 322-7.000.
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Kashiwagi, Shinichi: *See*—
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Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,343,250, Cl. 112-168.000.
Kato, Tadao: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.
Katsuyama, Harumi: *See*—
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, 4,343,948, Cl. 549-13.000.
Katz, Irving M., to Merck & Co., Inc. Shaped ophthalmic inserts for treating dry eye syndrome. 4,343,787, Cl. 424-78.000.
Katz, Lawrence E., to Olin Corporation. 2-Trichloromethyl-4-pyrimidinyl carbamates and their use as fungicides. 4,343,803, Cl. 424-251.000.
Katz, Sharron: *See*—
Lazowski, James C.; Katz, Sharron; and Winship, John A., 4,343,047, Cl. 2-411.000.
Kaubisch, Nikolaus: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Kawabe, Toshihiko, to Yanmar Diesel Engine Co., Ltd. Internal combustion engine. 4,343,270, Cl. 123-196.00V.
Kawachi, Hideo; and Nakamichi, Niro, to Nakamichi Corporation. Head vertical alignment means for a tape recorder. 4,344,099, Cl. 360-109.000.
Kawaguchi, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Disk brake assembly. 4,343,380, Cl. 188-18.00A.
Kawahito, Tsuneyoshi: *See*—
Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.
Kawai, Jun; Bessyo, Hidekazu; and Hibino, Hidehiko, to Nippon Oil and Fats Co., Ltd. Process for separating a specified component contained in a mixture of multiple fatty components from the mixture thereof. 4,343,744, Cl. 260-412.100.
Kawai, Yoshio: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,343,959, Cl. 585-640.000.
Kawamoto, Toshiaki: *See*—
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,343,596, Cl. 417-252.000.
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, to Fuji Photo Film Co., Ltd. 2,6-Di-tert-butyl-4-methyl thiopyrylium salt. 4,343,948, Cl. 549-13.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Tamba, Shinichi; Yamamoto, Hitoshi; and Uda, Ryoji, 4,343,377, Cl. 184-6.500.
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, to Yamanouchi Pharmaceutical Co., Ltd. Sustained release pharmaceutical composition of solid medical material. 4,343,789, Cl. 424-78.000.
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, to Asahi-Dow Limited; and Toa Wool Spinning & Weaving Co., Ltd. Method of preparing a scoured animal hair material. 4,343,619, Cl. 8-139.000.
Keister, Bernard, to Eaton Corporation. Fatigue resistant high pressure hose. 4,343,333, Cl. 138-125.000.
Keller, Josef: *See*—
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.
Kellett, Henry G., to Trans-Data Associates. Apparatus and method for articulatory speech recognition. 4,343,969, Cl. 179-1.0SD.
Kells, Edward L.; and Narowski, Robert L., to Groen Division/Dover Corporation. Vapor jacketed cooking vessel. 4,343,292, Cl. 126-378.000.
Kelly, James C.; and Garnett, Frederick W., to Starkville Tool and Die Company. Automated placket shirt machine. 4,343,255, Cl. 112-262.300.
Kelly, Robert H.: *See*—
Moyer, Anthony M.; and Kelly, Robert H., 4,343,580, Cl. 411-468.000.
Kelman, Charles D. Intraocular lenses. 4,343,050, Cl. 3-13.000.
Kemmler, Lothar, to Samson Aktiengesellschaft. Automatic control system. 4,343,224, Cl. 91-47.000.
Kenichi, Yoshida, to Nissan Motor Company, Limited. Knocking detector. 4,343,178, Cl. 73-35.000.
Kennedy, John C.: *See*—
Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus, 4,343,200, Cl. 74-57.000.
Keogh, Michael J., to Union Carbide Corporation. Water curable, amino silane modified alkylene-alkyl acrylate copolymers. 4,343,917, Cl. 525-106.000.
Keramidas, Vassilis G.: *See*—
Dutt, Bulusu V.; Keramidas, Vassilis G.; and Temkin, Henryk, 4,343,674, Cl. 156-601.000.
Kern, Calvin V.; and Mitton, Bruce W., to Eltra Corporation. Anti-supercharge pressure valve. 4,343,153, Cl. 60-460.000.
Kernforschungsanlage Julich GmbH: *See*—
Chatzipetros, Johann; and Helten, Manfred, 4,343,413, Cl. 220-425.000.
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.
Kessick, Michael A.; and St. Denis, C. Earl, to Research Council of Alberta. Pipeline transportation of heavy crude oil. 4,343,323, Cl. 137-13.000.
Keve, Tibor: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, to Linde Aktiengesellschaft. High pressure purification of hydrogen. 4,343,633, Cl. 62-23.000.
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, to Mitsubishi Gas Chemical Co., Inc. Process for the production of tertiary olefin. 4,343,959, Cl. 585-640.000.
Kido, Kunio: *See*—
Tanaka, Shinsaku; and Kido, Kunio, 4,344,096, Cl. 360-96.500.
Kiewert, Eva; Disch, Karlheinz; and Wegner, Jurgen, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Cleansers for windows, mirrors and reflecting surfaces containing a high molecular weight polyoxyethylene glycol polymer. 4,343,725, Cl. 252-542.000.
Kikuchi, Fumiaki: *See*—
Uozumi, Yasuzi; Hashiguchi, Makoto; and Kikuchi, Fumiaki, 4,343,281, Cl. 123-519.000.
Kim, Kwan Y.; and Fracker, Clarence E., to Owens-Corning Fiberglas Corporation. Glass fiber-forming apparatus. 4,343,635, Cl. 65-1.000.
Kimball, Paul A., to Phillips Petroleum Company. Apparatus for transporting containers. 4,343,575, Cl. 406-19.000.
Kimchi, Yigal: *See*—
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,343,159, Cl. 62-475.000.
Kimmel, Loren L., to Dresser Industries, Inc. Basic oxygen furnace construction. 4,343,459, Cl. 266-243.000.
Kimura, Mitsuteru, to Ricoh Co., Ltd. Gas detector. 4,343,768, Cl. 422-97.000.
Kimura, Shigenobu: *See*—
Ogita, Minoru; and Kimura, Shigenobu, 4,344,187, Cl. 455-182.000.
Kinsbron, Eliezer; Levinstein, Hyman J.; and Willenbrock, William E., Jr., to Bell Telephone Laboratories, Incorporated. Method for patterning films using reactive ion etching thereof. 4,343,677, Cl. 156-643.000.
Kinzer, Donald L., to Hughes Tool Company. Gage row structure of an earth boring drill bit. 4,343,372, Cl. 175-374.000.
Kioritz Corporation: *See*—
Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, 4,343,273, Cl. 123-335.000.
Kishimoto, Juji: *See*—
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Kishimoto, Shinzo: *See*—
Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, 4,343,894, Cl. 430-528.000.
Kistenmacher, Hans: *See*—
Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, 4,343,633, Cl. 62-23.000.
Kitagawa, Tohru: *See*—
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,343,197, Cl. 73-862.650.
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., to International Flavors & Fragrances Inc. Cyclohexyl phenethylether derivatives for combatting tobacco beetles. 4,343,791, Cl. 424-84.000.
Kizu, Ryouhei: *See*—
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.

Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, to Texas Instruments Incorporated. Programming sequence for electrically programmable memory. 4,344,154, Cl. 365-194.000.

Klamut, Carl J.: *See*—
Luhman, Thomas; Klamut, Carl J.; Suenaga, Masaki; and Welch, David, 4,343,867, Cl. 428-614.000.

Klausz, Remy, to Compagnie Generale de Radiologie. Method and apparatus for automatically centering an object for tomodensitometric examination. 4,343,995, Cl. 278-21.000.

Klein, Gary S.: *See*—
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., 4,343,844, Cl. 428-36.000.

Klekamp, William H.; and Tullis, Philip H., to Caterpillar Tractor Co. Scraper bowl structure. 4,343,101, Cl. 37-129.000.

Klemm, Walter: *See*—
Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, 4,343,779, Cl. 423-305.000.

Klockner-Werke AG: *See*—
Schulte, Heinrich, 4,343,614, Cl. 474-155.000.

Kloostra, M. Leon: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,343,194, Cl. 73-861.650.

Knapp, Edward J., Jr.; and Perreault, Richard J., to Gould, Inc. Low voltage cartridge fuse design. 4,344,058, Cl. 337-148.000.

Knickerbocker, Robert H., to Siemon Company, The. Electrical panel connector hold-down adapter. 4,343,525, Cl. 339-75.00P.

Knitsch, Karl-Wolfgang: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

Knoth, Werner-Dieter: *See*—
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Knox, James L.: *See*—
Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., 4,343,421, Cl. 226-113.000.

Knute, Wallace L., to Ivac Corporation. Temperature sensing probe and disposable probe cover. 4,343,185, Cl. 374-158.000.

Kobayashi, Hisao; and Fujita, Kazuo, to Kao Soap Company, Ltd. Process and apparatus for manufacturing soap pads. 4,343,335, Cl. 140-71.00C.

Kobayashi, Nobuo: *See*—
Nagamoto, Mitsuki; and Kobayashi, Nobuo, 4,344,103, Cl. 361-160.000.

Kobayashi, Tadashi: *See*—
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.

Kobayashi, Takao, to Shinshuseiki Kabushiki Kaisha. Ink ribbon cartridge. 4,343,556, Cl. 400-196.100.

Kobuke, Takayoshi: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.

Koch, Ulf; and Nagel, Gerhard, to Esselte Pendaflex Corporation. Counting or printing mechanism for consecutive counting numbering. 4,343,238, Cl. 101-85.000.

Koenig, Walter, Jr., to Bell Telephone Laboratories, Incorporated. Signaling system. 4,343,970, Cl. 179-1.50R.

Kohn, Henri A., to Baltek Corporation. Balsa-core sandwich laminate. 4,343,846, Cl. 428-138.000.

Komatsu, Fumito; and Orii, Makoto, to Kabushiki Kaisha Sankyo Seki Seisakusho. Acoustic sound generating device. 4,343,221, Cl. 84-404.000.

Komatsubara, Masahiro: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.

Kondo, Masatoshi: *See*—
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, 4,343,083, Cl. 29-832.000.

Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, to Kioritz Corporation. Ignition system with overrun prevention. 4,343,273, Cl. 123-335.000.

Konig, Dieter: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Konno, Kazuhiko; Goh, Atsushi; and Uchimura, Kunio, to Mitsubishi Petrochemical Co., Ltd. Process for production of thiolcarbamates and the thiolcarbamates obtained by said process. 4,343,737, Cl. 260-239.0BF.

Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, to Boehringer Ingelheim GmbH. 1-Aryloxy-2-hydroxy-3[(heterocyclic-substituted alkyl)-amino]propanes and salts thereof. 4,343,800, Cl. 424-248.500.

Koperda, Francis R.: *See*—
Dixon, Jerry D.; Farrell, Robert H.; and Koperda, Francis R., 4,344,132, Cl. 364-200.000.

Korobkov, Vladlen V.: *See*—
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,343,368, Cl. 173-139.000.

Kostan, Charles C.: *See*—
Fox, David H.; and Kostan, Charles C., 4,343,269, Cl. 123-146.50A.

Kosuda, Toru; and Matsui, Takeshi, to Nippon Soken, Inc. Automatic drive mechanism for vehicles. 4,343,385, Cl. 192-0.02R.

Kousokabe, Hirokatu, to Hitachi, Ltd. Scroll-type positive fluid displacement apparatus having lubricating oil circulating system. 4,343,599, Cl. 418-55.000.

Koyama, Hideaki, to Sanyo Electric Co., Ltd. Electronic controlled heat cooking apparatus. 4,343,977, Cl. 219-10.55B.

Kralicek, Jaroslav: *See*—
Roda, Jan; and Kralicek, Jaroslav, 4,343,933, Cl. 528-312.000.

Kramer, Werner: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

Krasel, Werner: *See*—
Benninger, Siegfried; Reining, Karl; and Krasel, Werner, 4,343,621, Cl. 23-293.00R.

Krause, Horst J. Perforated pipe. 4,343,359, Cl. 166-233.000.

Kravig, Hal C.; and Van Drie, John T., to Vollrath Company, The. Decorated laminate having indicia applied photoelectrographically and method of making same. 4,343,850, Cl. 428-203.000.

Kreighbaum, William E.; and Comer, William T., to Mead Johnson & Company. Anti-tumor quinazoline compounds. 4,343,940, Cl. 544-283.000.

Krijnen, Henricus C. M.: *See*—
Habets, Antonius H. M.; and Krijnen, Henricus C. M., 4,344,104, Cl. 361-230.000.

Kroeger, Edward R.; and Myers, Philip E., to Warner Electric Brake & Clutch Company. Electromagnet with replaceable friction face. 4,344,056, Cl. 335-219.000.

Krupin, Theodore: *See*—
Podos, Steven; Krupin, Theodore; and Becker, Bernard, 4,343,794, Cl. 424-131.000.

Kruschwitz, Werner; and Andrzejewski, Heinz, to Draftex Development AG. Window glass mounting arrangements. 4,343,121, Cl. 52-208.000.

Kubiatowicz, James F. Structure for use in microwave cooking. 4,343,978, Cl. 219-10.55E.

Kubodera, Seiiti: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.

Kubota, Yuzuru: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,344,025, Cl. 318-729.000.

Kueny, Martin J.: *See*—
Assmann, John J.; Knox, James L.; Kueny, Martin J.; and Smith, James W., 4,343,421, Cl. 226-113.000.

Kuhn, Michael; and Bunge, Ernst, to U.S. Philips Corporation. Method and device for verifying signals, especially speech signals. 4,344,031, Cl. 324-77.00R.

Kuhn S.A.: *See*—
Neuerburg, Horst, 4,343,138, Cl. 56-15.900.

Kuhnert, Werner: *See*—
Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, 4,343,519, Cl. 308-37.000.

Kuipers, Jan, to U.S. Philips Corporation. Medical apparatus with cable guide. 4,343,996, Cl. 378-21.000.

Kula, Maria-Regina: *See*—
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, 4,343,735, Cl. 260-112.00R.

Kulagin, Rim A.: *See*—
Fadeev, Vladimir Y.; Fadeeve, Petr Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,343,368, Cl. 173-139.000.

Kulprathipanja, Santi; and Neuzil, Richard W., to UOP Inc. Use of esterified silica for separation of ethanol from water. 4,343,623, Cl. 44-53.000.

Kumar, Naresh, to Lowe's, Inc. Clay agglomeration process. 4,343,751, Cl. 264-37.000.

Kunita, Yoshisuke; Ishida, Yoshikatsu; and Kuwabara, Masaharu, to Nippon Gakki Seizo Kabushiki Kaisha. Golf game practicing apparatus. 4,343,469, Cl. 273-185.00A.

Kunzi, Hans-Ulrich: *See*—
Guntherodt, Hans-Joachim; Pfluger, Peter; and Kunzi, Hans-Ulrich, 4,343,537, Cl. 350-357.000.

Kure-Jensen, Jens; and Coppola, Patrick S., to General Electric Company. Apparatus for individual isolation of hydraulically actuated valves. 4,343,454, Cl. 251-26.000.

Kuriki, Choei: *See*—
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, 4,344,089, Cl. 358-167.000.

Kurosawa, Yasuhiro; and Matsushima, Tetsuo, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital type distance relay system. 4,344,143, Cl. 364-492.000.

Kuroyone, Kazuo. Punch press. 4,343,210, Cl. 83-71.000.

Kustka, George J.; and Sipek, Steven J., to Bell Telephone Laboratories, Incorporated. Equalizer section. 4,343,759, Cl. 375-14.000.

Kustka, George J., to Bell Telephone Laboratories, Incorporated. Equalizer comprised of equalizer sections which include internal accumulation circuits. 4,344,177, Cl. 375-16.000.

Kusunoki, Yoshinobu: *See*—
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.

Kuwabara, Masaharu: *See*—
Kunita, Yoshisuke; Ishida, Yoshikatsu; and Kuwabara, Masaharu, 4,343,469, Cl. 273-185.00A.
Kuypers, Leonardus P. C.: *See*—
Wolters, Gerrit; and Kuypers, Leonardus P. C., 4,343,896, Cl. 435-7.000.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, 4,343,943, Cl. 546-183.000.
La Barre, Berger: *See*—
Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus, 4,343,200, Cl. 74-57.000.
Lagerholm, Kurt; and Faber, Kurt H. A. E., to Sandvik Aktiebolag. Boring device. 4,343,576, Cl. 408-155.000.
Laidler, Dale A.; and Milner, David J., to Imperial Chemical Industries Limited. Chiral compounds. 4,343,935, Cl. 542-414.000.
Laiho, Reino: *See*—
Rantanen, Mikko; Tuomi, Alpo; and Laiho, Reino, 4,343,708, Cl. 210-744.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Gauthier, Pierre, 4,343,156, Cl. 62-52.000.
Lam, Tony Y. K.: *See*—
Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., 4,343,814, Cl. 424-279.000.
Lambda Industrial Science Limited: *See*—
Anderson, Alan P.; and Jackson, John C., 4,344,030, Cl. 324-58.50B.
Lance, Mark A., to Illinois Tool Works. Tube clamp. 4,343,066, Cl. 17-1.00R.
Lanchantin, Charles E., Jr.: *See*—
Smead, Robert G.; Richards, Thomas J.; and Lanchantin, Charles E., Jr., 4,343,828, Cl. 427-27.000.
Landrum, Ralph A., Jr.; Vallhonrat, Juan B.; and Perry, Paul M., to Western Geophysical Co. of America. Noise-suppression method. 4,344,158, Cl. 367-73.000.
Lane, Robert L.: *See*—
Dodd, John A.; and Lane, Robert L., 4,343,655, Cl. 106-214.000.
Lang, Udo: *See*—
Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, 4,343,633, Cl. 62-23.000.
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Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, to Sumitomo Chemical Company, Limited. Method for preparing 4-hydroxy-3-methyl-2-(2-propynyl)-2-cyclopentenolone. 4,343,953, Cl. 568-347.000.

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Kurosawa, Yasuhiro; and Matsushima, Tetsuo, 4,344,143, Cl. 364-492.000.

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Nishimoto, Tadashi; and Oka, Shunzo, 4,344,063, Cl. 338-160.000.
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, 4,343,083, Cl. 29-832.000.
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Ueda, Shigeki, 4,343,990, Cl. 219-492.000.
Yokobori, Nobuyoshi; Igarashi, Yoshiaki; and Maeda, Tetsuo, 4,344,023, Cl. 318-254.000.

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Wissler, Josef H., 4,343,793, Cl. 424-101.000.

May, Gordon C., to Rolls-Royce Limited. Static shroud for a rotor. 4,343,592, Cl. 415-171.000.

Mayfield, Robert J.: *See*—
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.

McArdle, Beryl L., to General Dynamics Corporation Electronics Division. Autokey code generator. 4,343,967, Cl. 178-22.190.

McCandless, Thomas J.: *See*—
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McConnel, Ronald J., to Weyerhaeuser Company. Apparatus for applying adhesive in corrugated board manufacture. 4,343,259, Cl. 118-44.000.

McCormick, Lloyd G.; and Score, Robert E., to EA Industries, Incorporated. Method and apparatus for producing bales. 4,343,131, Cl. 53-397.000.

McDaniel, George H.; Hartford, Thomas W.; Hungerford, William R.; Perzanowski, William J.; and Benaglio, Reno V., to Bendix Corporation, The. Microprocessor based process control system. 4,344,127, Cl. 364-130.000.

McDonald, Charles D. Man-overboard rescue apparatus for sailboats. 4,343,056, Cl. 441-84.000.

McDonald, Peter, to Firestone Tire & Rubber Company, The. Unified modular indicia marking for rubber articles. 4,343,342, Cl. 152-353.00R.

McDonald, William S.: *See*—
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McGlen, James A.: *See*—
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McGraw-Edison Company: *See*—
Ruud, Alan J.; and Lewin, Ian, 4,344,111, Cl. 362-33.000.

McGuire, Joseph C., to United States of America, Energy. Heat transfer system. 4,343,763, Cl. 376-314.000.

McLaughlin, George H., to Newmont Mining Corporation. Coherent noise cancelling filter. 4,344,150, Cl. 364-724.000.

McLean, James D.: *See*—
Long, Merton W.; McLean, James D.; Armentrout, David N.; and Gill, Harold H., 4,343,767, Cl. 422-70.000.

McLuskie, Albert; Ratjen, Johann; and Vehling, Ernst, to Neumuenstersche Maschinen- und Apparatebau GmbH (NEUMAG). Fiber cutting machine. 4,343,069, Cl. 19-0.600.

McNaught, John P., to Lever Brothers Company. Process for preparing beads of fat. 4,343,826, Cl. 426-601.000.

Mead Johnson & Company: *See*—
Kreighbaum, William E.; and Comer, William T., 4,343,940, Cl. 544-283.000.

Medtronic, Inc.: *See*—
Markowitz, H. Toby, 4,343,311, Cl. 128-419.0PG.

Meeks, Alan M. G., to ITW Limited. Door handle assembly. 4,343,501, Cl. 292-336.300.
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Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, 4,343,339, Cl. 152-209.00R.
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Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, 4,343,779, Cl. 423-305.000.
Melchior, Michael T.; Milliman, George E.; and Sartori, Guido, to Exxon Research & Engineering Co. 1-Secondary or 1-tertiary alkyl or cycloalkyl-hexahydro-2-pyrimidinones and 1-secondary or 1-tertiary alkyl or 1-cycloalkyl-2-imidazolidinones and their use as antifoaming agents. 4,343,716, Cl. 252-192.000.
Mena, Edouard, to Publimepharm. Method and circular transfer apparatus for automatized conditioning of pharmaceutical phials. 4,343,128, Cl. 53-167.000.
Mendelsohn, Morris A., to Westinghouse Electric Corp. Epoxy-elastomer low temperature curable, solventless, sprayable, stator winding adhesive-bracing compositions. 4,344,006, Cl. 310-43.000.
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, to Gesellschaft fur Biotechnologische Forschung mbH (GBF). Process for the purification of interferon. 4,343,735, Cl. 260-112.00R.
Mensink, Kornelis A.: *See*—
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.
Mentrup, Anton: *See*—
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.
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Merck & Co., Inc.: *See*—
Christensen, Burton G.; Karady, Sandor; Cama, Lovji D.; and Sletzinger, Meyer, 4,343,937, Cl. 544-021.000.
Gullo, Vincent P.; Lam, Tony Y. K.; and Monaghan, Richard L., 4,343,814, Cl. 424-279.000.
Katz, Irving M., 4,343,787, Cl. 424-78.000.
Merck, Sharp & Dohme (I.A.) Corp.: *See*—
Wasson, Burton K.; and Weinstock, Leonard M., 4,343,802, Cl. 424-250.000.
Mericle, Gerald E. Cleaning device for syringe type needles. 4,343,306, Cl. 128-218.00N.
Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See*—
Endruhn, Dieter, 4,343,237, Cl. 101-11.000.
Meyer, Carl R.: *See*—
Witte, Donald H., 4,343,120, Cl. 52-184.000.
Meyer, Carol S.: *See*—
Witte, Donald H., 4,343,120, Cl. 52-184.000.
Meynard, Jean-Yves, to Siplast S.A. Sealing membrane with incorporated limited-slip sheet and its method of manufacture. 4,343,847, Cl. 428-139.000.
Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, to Akzo, N.V. Gear wheel pump with reduced power requirement. 4,343,602, Cl. 418-77.000.
Michaels, Edward D., to United States of America, Energy. Process for preparing a chemical compound enriched in isotope content. 4,343,685, Cl. 204-101.000.
Michel, Yves C.: *See*—
Chekroun, Claude; Michel, Yves C.; and Sadones, Henri, 4,344,077, Cl. 343-754.000.
Miller, Barry: *See*—
Heller, Adam; Lewerenz, Hans J.; and Miller, Barry, 4,343,870, Cl. 429-111.000.
Miller, Elmo D., to Western Electric Co., Inc. Sealing articles into a glass envelope and compound holder therefor. 4,343,643, Cl. 65-103.000.
Miller, Frederick A., to Circon Corporation. Miniature video camera means for video system. 4,344,092, Cl. 358-217.000.
Miller, Gerald D.: *See*—
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,133, Cl. 53-431.000.
Daniels, Wiley E.; Davidowich, George; and Miller, Gerald D., 4,343,403, Cl. 206-812.000.
Davidowich, George; and Miller, Gerald D., 4,343,134, Cl. 53-431.000.
Miller, Jan D.; and Simkovich, George, to University of Utah Research Foundation. Enhanced leaching of minerals which form product layers. 4,343,773, Cl. 423-1.000.
Miller, John C.; and Burnett, Archibald L., to Union Carbide Corporation. Process for extruding ethylene polymers. 4,343,755, Cl. 264-176.00R.
Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., to Caterpillar Tractor Co. Method and apparatus for controlling differentially driven wheel slip. 4,344,139, Cl. 364-426.000.
Miller, Wayne R.; and Von Fumetti, Cyril W., to Deere & Company. Combined hydraulic fluid reservoir and return fluid filter support structure. 4,343,697, Cl. 210-90.000.
Millheiser, Melvin, to Waldes Kohinoor, Inc. Double-bevel spring retaining ring. 4,343,581, Cl. 411-517.000.
Milliken Research Corporation: *See*—
Schroder, William J., 4,343,071, Cl. 28-254.000.
Milliman, George E.: *See*—
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Milner, David J.: *See*—
Laidler, Dale A.; and Milner, David J., 4,343,935, Cl. 542-414.000.
Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, to Fuji Photo Film Co., Ltd. Photographic light-sensitive element with antistatic protective layer. 4,343,894, Cl. 430-528.000.
Minegishi, Keiichi: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.
Minjolle, Louis, to Ceraver. Die for extruding ceramic material to form a body of cellular structure, and a method of obtaining said die. 4,343,604, Cl. 425-192.00R.
Minkkinen, Ari A., to Lummus Company, The. Heat and water recovery from aqueous waste streams. 4,343,691, Cl. 208-11.0LE.
Minnesota Mining and Manufacturing Company: *See*—
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.
Barrows, Thomas H., 4,343,931, Cl. 528-291.000.
Conder, Terrence M., 4,343,855, Cl. 428-332.000.
Stivers, David A., 4,343,861, Cl. 428-413.000.
Mino, Mineo: *See*—
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, 4,344,087, Cl. 358-127.000.
Mintzlaff, Roger G.: *See*—
Fung, Anthony K.; and Mintzlaff, Roger G., 4,344,130, Cl. 364-200.000.
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Davidson, Ronnie D.; and Misencik, John J., 4,344,100, Cl. 361-45.000.
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, to Nippon Telegraph & Telephone Public Corporation. Method for manufacturing glass fibers from an infrared ray-transmitting glass fiber material. 4,343,638, Cl. 65-2.000.
Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, to Hitachi, Ltd. Thermal printhead. 4,343,986, Cl. 219-216.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Nosaka, Eisyo, 4,344,017, Cl. 315-16.000.
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.
Toda, Haruhisa; and Matsumoto, Yoshiaki, 4,344,055, Cl. 335-174.000.
Mitsubishi Gas Chemical Co., Inc.: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,343,959, Cl. 585-640.000.
Saito, Masao; Onda, Yuuzi; and Murayama, Yuko, 4,343,722, Cl. 252-431.00N.
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Konno, Kazuhiko; Goh, Atsushi; and Uchimura, Kunio, 4,343,737, Cl. 260-239.0BF.
Mitsui Toatsu Chemicals, Inc.: *See*—
Shimomura, Takao, 4,343,192, Cl. 73-861.210.
Mitton, Bruce W.: *See*—
Kern, Calvin V.; and Mitton, Bruce W., 4,343,153, Cl. 60-460.000.
Miyagi, Isamu, to Nippon Electric Co., Ltd. IGFET Forming method. 4,343,078, Cl. 29-571.000.
Miyake, Yukiharu: *See*—
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Miyazaki, Yukinobu: *See*—
Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, 4,343,852, Cl. 428-216.000.
Mizokami, Kazunori, to Olympus Optical Co., Ltd. Reflection photometric apparatus for camera including focal plane shutter. 4,343,541, Cl. 354-51.000.
Mizokami, Kazunori, to Olympus Optical Company Ltd. Diaphragm control apparatus for combined use of an electronic flash with a camera. 4,343,544, Cl. 354-149.000.
Mizuno, Shoji, to Nippon Electric Co., Ltd. Encoder for encoding a multilevel pel signal sequence with probability representative mode codes allotted to prediction error codes for each pel signal and a decoder therefor. 4,344,086, Cl. 358-78.000.
Mobay Chemical Corporation: *See*—
Lim, In C., 4,343,912, Cl. 521-90.000.
Moelbert, Heinrich, to Advanced Machine Design Company. Zone heating and shearing system, and method. 4,343,209, Cl. 83-16.000.
Moeller, Brian J. Pig holding device. 4,343,266, Cl. 119-98.000.
Mohan Rao, G. R.: *See*—
White, Lionel S., Jr.; and Mohan Rao, G. R., 4,344,157, Cl. 365-222.000.
Mollier, Jean H., to Compagnie Internationale pour l'Informatique CII-Honeywell Bull (Societe Anonyme). Method of and apparatus for inscribing a control character in a memory. 4,344,155, Cl. 365-200.000.
Momma, Yoshinobu: *See*—
Hataishi, Osamu; Momma, Yoshinobu; and Abe, Ryoji, 4,343,080, Cl. 29-571.000.

Monaghan, Richard L.: *See*—
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Moneymaker, Robert R.: *See*—
Fernstrom, George A.; Hebeler, Harold H.; Lin, Perry H.; and Moneymaker, Robert R., 4,343,860, Cl. 428-371.000.

Monroe, William E.: *See*—
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., 4,343,225, Cl. 91-52.000.

Monsanto Company: *See*—
Danko, Michael J.; Randall, Leslie L.; Smith, Ray J.; and Walsh, James E., 4,343,190, Cl. 73-846.000.

Monsanto Europe S.A.: *See*—
Allart, Pierre J.; and Guillaume, Claude A., 4,343,652, Cl. 106-21.000.

Montemarano, Thomas W.; and Wells, Michael E., to United States of America, Navy. Crack susceptibility test utilizing an airport restraint specimen. 4,343,424, Cl. 228-104.000.

Mooney, John B.: *See*—
Sher, Arden; and Mooney, John B., 4,343,881, Cl. 430-57.000.

Moore, Douglas: *See*—
Swain, Richard S.; and Moore, Douglas, 4,343,216, Cl. 84-1.010.

Moorman, David S., to Witco Chemical Corporation. Flame retardant composition. 4,343,854, Cl. 428-290.000.

Moreau, Marc, to Trefimetaux. Process for continuous hydrostatic extrusion of metals therefor. 4,343,169, Cl. 72-45.000.

Morelli, Patrick T.: *See*—
Lawrence, Rodney G.; and Morelli, Patrick T., 4,343,863, Cl. 428-485.000.

Morgan, Fred K.: *See*—
Maringer, Melvin F.; and Morgan, Fred K., 4,343,733, Cl. 524-87.000.

Morgan, J. Giles; Rennich, Mark J.; and Whatley, Marvin E., to United States of America, Energy. Face seal assembly for rotating drum. 4,343,478, Cl. 277-90.000.

Mori, Sukeo, to Mori, Sukeo. Method and apparatus for detecting sewing defects on a stocking toe closer. 4,343,998, Cl. 250-563.000.

Moriarty, Frederick J.; and Paquette, Edmund T., to Wright Line Inc. Periodical shelf. 4,343,244, Cl. 108-1.000.

Morin, Francois; and Bonnel, Madeleine, to L'Etat Francais represente par le Secretaire d'Etat aux Postes et Telecommunications et a la Telediffusion (Centre National d'Etudes des Telecommunications). Process for making semi-conductor devices. 4,343,081, Cl. 29-571.000.

Morise, Hiroshi: *See*—
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, 4,343,736, Cl. 260-112.00R.

Morita, Masaaki: *See*—
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,343,862, Cl. 428-421.000.

Morr, Michael: *See*—
Menge, Ulrich; Morr, Michael; Kula, Maria-Regina; and Anastassiadis, Kristin, 4,343,735, Cl. 260-112.00R.

Morris, Paul E.: *See*—
Fettel, Bruce E.; Morris, Paul E.; and Lichte, Leo J., 4,343,049, Cl. 3-1.500.

Morrison, Willard L. Antimicrobially treated fabric construction. 4,343,853, Cl. 428-233.000.

Morz, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Four-port network for separating two signals comprised of doubly polarized frequency bands. 4,344,048, Cl. 333-135.000.

Motonami, Masanao: *See*—
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,343,489, Cl. 280-804.000.

Motorola, Inc.: *See*—
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Lee, Robert D., 4,344,067, Cl. 340-347.0CC.
Panicali, Natalino, 4,344,124, Cl. 363-49.000.
Ryan, Carl R., 4,344,179, Cl. 375-110.000.
Sarma, Kalluri R.; and Legge, Ronald N., 4,343,830, Cl. 427-38.000.
Smith, James N.; and Thompson, Arthur D., III, 4,343,832, Cl. 427-53.100.

Moyer, Anthony M.; and Kelly, Robert H., to Gang Nail Systems, Inc. Structural joint connector. 4,343,580, Cl. 411-468.000.

MPW Tech. Associates: *See*—
Ware, Franklyn O.; and McDonald, William S., 4,343,654, Cl. 106-213.000.

Mt. Sinai: *See*—
Podos, Steven; Krupin, Theodore; and Becker, Bernard, 4,343,794, Cl. 424-131.000.

MTU Motoren - und Turbinen-Union Friedrichshafen GmbH: *See*—
Butscher, Franz, 4,343,274, Cl. 123-357.000.

Muacevic, Gojko: *See*—
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.

Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, to Hoechst Aktiengesellschaft. Process for the manufacture of 2,3-perfluoro-1,4-dioxanes as well as some special representatives of compounds of this class. 4,343,742, Cl. 549-380.000.

Muller, Peter; and Mustacchi, Henry, to Andrews Paper & Chemical Co., Inc. Diazotype developing process and acidic developer with amine base salt. 4,343,884, Cl. 430-149.000.

Munson, Harry R., Jr.; and Alphin, Reevis S., to A. H. Robins Company, Inc. 4-Amino-3-quinolinecarboxylic acids and esters-antisecretory anti-ulcer compounds. 4,343,804, Cl. 424-258.000.

Murakami, Kanji; Wajima, Motoyo; and Ishikawa, Tetsuo, to Hitachi, Ltd. Process for producing copper barrier type, nuclear fuel cladding. 4,343,659, Cl. 148-6.300.

Muramoto, Ikuo: *See*—
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.

Murashima, Kumiko. Fabric stretcher. 4,343,103, Cl. 38-102.000.

Murayama, Yuko: *See*—
Saito, Masao; Onda, Yuuzi; and Murayama, Yuko, 4,343,722, Cl. 252-431.00N.

Murphy, Norman A.; Banner, John G.; Fletcher, Edwin; and Brown, Arthur, to Pilkington Brothers Limited. Processes for finishing glass surfaces. 4,343,116, Cl. 51-284.00R.

Murphy, Richard F., to Holland Company. Coupler lubricating bearing wear liner channel shaped support plate. 4,343,407, Cl. 213-51.000.

Musa, Fuad H.: *See*—
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Muschelknautz, Edgar; and Rink, Norbert, to Bayer Aktiengesellschaft. Process for production of fiber mats. 4,343,639, Cl. 65-4.400.

Mustacchi, Henry: *See*—
Muller, Peter; and Mustacchi, Henry, 4,343,884, Cl. 430-149.000.

Mustacich, Robert V.; Lucas, Donald S.; and Stone, Roger L., to Procter & Gamble Company, The. Antimicrobial polymer compositions. 4,343,788, Cl. 424-78.000.

Muto, Rudolph. Cigarette filter with oblique partitions. 4,343,320, Cl. 131-339.000.

Mutter, Alfred, to Wampfler GmbH. Connector apparatus for electrically conductive guide rails. 4,343,384, Cl. 191-22.00R.

Myer, Charles R., II. Self-driving support assembly. 4,343,570, Cl. 405-229.000.

Myers, Allen D.: *See*—
Miller, Robert G.; Myers, Allen D.; Phelps, Weldon L.; and Sieving, Alfred W., 4,344,139, Cl. 364-426.000.

Myers, Philip E.: *See*—
Kroeger, Edward R.; and Myers, Philip E., 4,344,056, Cl. 335-219.000.

N.I.S.E., Inc.: *See*—
Jonker, Roelof R.; and Webb, Dennis A., 4,343,542, Cl. 354-76.000.

Nagamoto, Mitsuki; and Kobayashi, Nobuo, to Matsushita Electric Works, Ltd.; and Sauer, Hans. Electromagnetic relay. 4,344,103, Cl. 361-160.000.

Nagase, Hiroshi: *See*—
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, 4,344,025, Cl. 318-729.000.

Nagashima, Nao, to Canon Kabushiki Kaisha. Image forming apparatus. 4,343,547, Cl. 355-14.00R.

Nagel, Gerhard: *See*—
Koch, Ulf; and Nagel, Gerhard, 4,343,238, Cl. 101-85.000.

Naka, Mitsuru: *See*—
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.

Nakabayashi, Masahiro: *See*—
Smith, Ronald B.; Galda, Edward J.; and Nakabayashi, Masahiro, 4,343,984, Cl. 219-146.300.

Nakagawa, Fumio: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.

Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, to Hitachi, Ltd. Shape testing apparatus. 4,343,553, Cl. 356-376.000.

Nakajima, Shunichi: *See*—
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Nakamichi Corporation: *See*—
Kawachi, Hideo; and Nakamichi, Niro, 4,344,099, Cl. 360-109.000.

Nakamichi, Niro: *See*—
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Nakamizo, Nobuhiro: *See*—
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Nakamura, Hideo: *See*—
Hasegawa, Yoshimichi; Furuta, Osamu; Shinta, Jouji; and Nakamura, Hideo, 4,343,167, Cl. 72-8.000.

Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, to Fuji Photo Film Co., Ltd. Method for stabilizing dye images in color photographic sensitive materials using a ligand as a dye image stabilizer precursor in combination with metal ions. 4,343,886, Cl. 430-237.000.

Nanjo, Yasuyuki, to Dainippon Screen Seizo Kabushiki Kaisha. Box type contact printer. 4,343,549, Cl. 355-113.000.

Nannelli, Piero: *See*—
Toukan, Sameeh S.; and Nannelli, Piero, 4,343,946, Cl. 548-177.000.

NAOHTACHIMIE Societe Anonyme: *See*—
Caumartin, Francois; Vidal, Jean L.; and Mangin, Pierre, 4,343,926, Cl. 526-68.000.

Narowski, Robert L.: *See*—
Kells, Edward L.; and Narowski, Robert L., 4,343,292, Cl. 126-378.000.

Nasretdin, Mansur A.; and Ohlander, Sten A. E., to U.S. Philips Corporation. Energy feed system for a microwave oven. 4,343,976, Cl. 219-10.55F.

National Distillers & Chemical Corp.: *See*—
Maringer, Melvin F.; and Morgan, Fred K., 4,343,733, Cl. 524-87.000.

National Research Development Corporation: *See*—
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.

National Steel Corporation: *See*—
O'Neil, Paul T., 4,343,522, Cl. 339-10.000.

Nauerth, Karl-Heinz: *See*—
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, 4,343,988, Cl. 219-302.000.

NCR Corporation: *See*—
Gardner, Harry N.; and Petty, John P., 4,344,091, Cl. 358-213.000.

Nees, John; and Bailey, Dale A., to General Battery Corporation. Calcium-strontium-lead grid alloy for use in lead-acid batteries. 4,343,872, Cl. 429-245.000.

Neil, Clyde C.: *See*—
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,343,890, Cl. 430-321.000.

Nelboeck, Michael: *See*—
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.

Nelson, Kenneth R., to Ingersoll-Rand Company. Doorknob construction. 4,343,502, Cl. 292-356.000.

Nelson, Robert L.: *See*—
Schneider, Urban A.; and Nelson, Robert L., 4,343,983, Cl. 219-145.210.

Nelson, Thomas L., to Du Pont de Nemours, E. I., and Company. Bulked continuous filament yarn with color-point heather. 4,343,146, Cl. 57-208.000.

Neu, Hans: *See*—
Herden, Werner; and Neu, Hans, 4,343,180, Cl. 73-115.000.

Neuerburg, Horst, to Kuhn S.A. Supporting structure for an agricultural machine. 4,343,138, Cl. 56-15.900.

Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang. Oxide charge induced high low junction emitter solar cell. 4,343,962, Cl. 136-255.000.

Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, to Boehringer Mannheim GmbH. Reagent for the determination of lipase and process for preparing same. 4,343,897, Cl. 435-19.000.

Neumuenstersche Maschinen- und Apparatebau GmbH (NEUMAG): *See*—
McLuskie, Albert; Ratjen, Johann; and Vehling, Ernst, 4,343,069, Cl. 19-0.600.

Neuweiler, Armin; and Stillhard, Otmar, to Fritz Gegauf AG Bernina-Naehmaschinenfabrik. Sewing machine. 4,343,256, Cl. 112-275.000.

Neuzil, Richard W.: *See*—
Kulprathipanja, Santi; and Neuzil, Richard W., 4,343,623, Cl. 44-53.000.

Newcomb, Nelson F.; and Newcomb, Nelson F., Jr. Short hitting baseball bat. 4,343,467, Cl. 273-26.00B.

Newcomb, Nelson F., Jr.: *See*—
Newcomb, Nelson F.; and Newcomb, Nelson F., Jr., 4,343,467, Cl. 273-26.00B.

Newkirk, Lawrence R.; Valencia, Flavio; Riley, Robert E.; and Wallace, Terry C., Sr., to United States of America, Energy. One-directional uniformly coated fibers, method of preparation, and uses therefor. 4,343,836, Cl. 427-249.000.

Newmont Mining Corporation: *See*—
McLaughlin, George H., 4,344,150, Cl. 364-724.000.

Niccum, Richard. Searchlight reversing mechanism. 4,344,117, Cl. 362-250.000.

Niedzinski, Edmund J.: *See*—
Oser, Nathan; and Niedzinski, Edmund J., 4,343,866, Cl. 428-593.000.

Nigro, Joseph P.: *See*—
Slikas, Anthony W.; and Nigro, Joseph P., 4,343,438, Cl. 241-196.000.

Nippon Electric Co., Ltd.: *See*—
Miyagi, Isamu, 4,343,078, Cl. 29-571.000.
Mizuno, Shoji, 4,344,086, Cl. 358-78.000.
Watanabe, Takaya; and Matsuba, Teruo, 4,343,536, Cl. 350-355.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Futamase, Tsuyoshi, 4,343,218, Cl. 84-1.210.
Kunita, Yoshisuke; Ishida, Yoshikatsu; and Kuwabara, Masaharu, 4,343,469, Cl. 273-185.00A.
Ogita, Minoru; and Kimura, Shigenobu, 4,344,187, Cl. 455-182.000.

Nippon Kogaku K.K.: *See*—
Onogi, Kenji, 4,343,545, Cl. 354-173.000.

Nippon Oil and Fats Co., Ltd.: *See*—
Kawai, Jun; Bessyo, Hidekazu; and Hibino, Hidehiko, 4,343,744, Cl. 260-412.100.

Nippon Seiko Kabushiki Kaisha: *See*—
Akabane, Yukihiro; Satoh, Hisashi; Shiraiwa, Yukio; and Tsuchiya, Shuyou, 4,343,521, Cl. 308-193.000.

Nippon Soken, Inc.: *See*—
Iwata, Toshiharu; and Hattori, Tadashi, 4,344,014, Cl. 313-143.000.
Kosuda, Toru; and Matsui, Takeshi, 4,343,385, Cl. 192-0.02R.

Nippon Telegraph & Telephone Public Corporation: *See*—
Arita, Takemi, 4,344,170, Cl. 370-68.000.
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,343,638, Cl. 65-2.000.
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, 4,343,871, Cl. 429-197.000.

Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, to Hitachi, Ltd. Magnetic bubble memory device and method of fabricating the same. 4,344,153, Cl. 365-39.000.

Nishimoto, Tadashi; and Oka, Shunzo, to Matsushita Electric Industrial Co. Ltd. Click setting variable resistor. 4,344,063, Cl. 338-160.000.

Nishimura, Satoshi: *See*—
Sugiura, Youji; and Nishimura, Satoshi, 4,344,039, Cl. 329-50.000.

Nishimura, Yosaku, to Vital Kogyo Kabushiki Kaisha. Trolley. 4,343,240, Cl. 105-154.000.

Nishioka, Toshio: *See*—
Matsuo, Noritada; Itaya, Nobushige; Aketa, Kohichi; Magara, Osamu; and Nishioka, Toshio, 4,343,953, Cl. 568-347.000.

Nissan Motor Co., Ltd.: *See*—
Asano, Masaharu, 4,343,278, Cl. 123-425.000.
Kenichi, Yoshida, 4,343,178, Cl. 73-35.000.
Tomioka, Hirotaka; and Yamagata, Shuji, 4,343,504, Cl. 296-76.000.

Nisshin Oil Mills Ltd.: *See*—
Takada, Moritaka; and Kanda, Hiroshi, 4,343,825, Cl. 426-570.000.

Nitto Boseki Co., Ltd.: *See*—
Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, 4,343,260, Cl. 118-204.000.

Nitto Chemical Industry Co., Ltd.: *See*—
Watanabe, Ichiro; and Satoh, Yoshiaki, 4,343,899, Cl. 435-129.000.
Watanabe, Ichiro, 4,343,900, Cl. 435-129.000.

Nittobo Itamikako Co., Ltd.: *See*—
Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, 4,343,260, Cl. 118-204.000.

Niwa, Yoshio, to Showa Electric Wire & Cable Co., Ltd. Temperature-sensitive fuse. 4,344,061, Cl. 337-407.000.

Nobileau, Philippe C.; and Jones, Darrell L., to Vetco Offshore, Inc. Conductor tieback connector. 4,343,495, Cl. 285-23.000.

Noly, Jean, to Potain. Control apparatus for a distribution crane equipped with a cable bucket. 4,343,406, Cl. 212-225.000.

Nomura, Setsuo: *See*—
Hayashi, Tadashi; and Nomura, Setsuo, 4,344,011, Cl. 313-57.000.

Nordlund, Sven P., to Svenor Modul-System AB. Tool holders and a method of their manufacture. 4,343,172, Cl. 72-339.000.

Norlin Industries, Inc.: *See*—
Swain, Richard S.; and Moore, Douglas, 4,343,216, Cl. 84-1.010.

Northern Engineering Industries Limited: *See*—
Hufton, Peter F., 4,343,170, Cl. 72-61.000.

Northern Telecom Limited: *See*—
Ostapovitch, Harold J., 4,343,076, Cl. 29-426.500.
Straus, Joseph, 4,344,173, Cl. 372-38.000.

Norton, Charles J.; and Falk, David O., to Marathon Oil Company. Process for cleaning a subterranean injection surface and for selectively reducing the permeability of a subterranean formation. 4,343,363, Cl. 166-281.000.

Norton, W. Jack, to PPG Industries, Inc. Temperature sensing device having a rotating reference member. 4,343,961, Cl. 136-230.000.

Nosaka, Eisyo, to Mitsubishi Denki Kabushiki Kaisha. Cathode ray tube used as light source. 4,344,017, Cl. 315-16.000.

Novo Industri A/S: *See*—
Markussen, Jan, 4,343,898, Cl. 435-71.000.

Nowak, Leonard G.: *See*—
Lippert, Charles; Nowak, Leonard G.; and Shefsiek, Paul K., 4,343,395, Cl. 198-781.000.

Nozawa, Takamitsu; and Tazaki, Takaharu, to Yoshino Kogyosho Co., Ltd. Compact having stay-open lid structure. 4,343,397, Cl. 206-37.000.

NRM Corporation: *See*—
Enders, George E., 4,343,671, Cl. 156-401.000.

Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Power steering device. 4,343,330, Cl. 137-625.480.

Obe, Sadao: *See*—
Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, 4,343,260, Cl. 118-204.000.

Oce-Nederland B.V.: *See*—
Habets, Antonius H. M.; and Krijnen, Henricus C. M., 4,344,104, Cl. 361-230.000.

Ocker, Klaus F.; Jodts, Richard J.; and Pfeiffer, Robert C., to Allied Corporation. Dual spool seat belt retractor with comfort feature. 4,343,445, Cl. 242-107.700.

O'Connor, James M.; Lickei, Donald D.; and Sessions, Willie J., to Olin Corporation. Polyurethane oligomer impact and shrinkage modifiers for thermoset polyesters. 4,343,916, Cl. 525-28.000.

O'Connor, Nicholas E. Disposable bedpan liner. 4,343,053, Cl. 4-452.000.

O'Dwyer, James B.: *See*—
Chang, Wen-Hsuan; O'Dwyer, James B.; and Peffer, John R., 4,343,925, Cl. 525-440.000.

Oellig, Franklin A.; and Campbell, Willis R., to Sperry Corporation. Baling machine with improved arm assembly for controlling expansion of the upper apron. 4,343,141, Cl. 56-341.000.

Officine Savio S.p.A.: *See*—
Barro, Giovanni, 4,343,145, Cl. 57-124.000.

Ogawa, Hisashi: *See*—
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,343,489, Cl. 280-804.000.

Ogawa, Norio: *See*—
Sudoh, Giichi; Minegishi, Keiichi; Akiba, Tokuji; Kato, Tadao; and Ogawa, Norio, 4,344,062, Cl. 338-35.000.

Ogita, Minoru; and Kimura, Shigenobu, to Nippon Gakki Seizo Kabushiki Kaisha. Radio receiver with system for maintaining optimum tuning. 4,344,187, Cl. 455-182.000.

Ohashi, Kazuyoshi: *See*—
Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, 4,343,852, Cl. 428-216.000.
Ohe, Takeshi; and Okamoto, Haruo, to Judosha Kiki Co., Ltd. Flow control valve. 4,343,324, Cl. 137-117.000.
Ohlander, Sten A. E.: *See*—
Nasretdin, Mansur A.; and Ohlander, Sten A. E., 4,343,976, Cl. 219-10.55F.
Ohmura, Tadayoshi: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.
Ohnaka, Hidemi; and Ishikawa, Norikatsu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Throttle valve opening controller. 4,343,277, Cl. 123-389.000.
Ohnmacht, Helmut: *See*—
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, 4,343,988, Cl. 219-302.000.
Ohnuma, Kunihiko: *See*—
Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, 4,344,129, Cl. 364-200.000.
Ohtake, Yasushi; and Hasegawa, Tsunao, to Pioneer Electronic Corporation. Method and apparatus detecting and setting optimum tape recording bias. 4,344,094, Cl. 360-66.000.
Oishi, Yasuo; and Ushimaru, Imao, to Kaise Electric Works Ltd. Testers. 4,344,101, Cl. 361-75.000.
Oka, Shunzo: *See*—
Nishimoto, Tadashi; and Oka, Shunzo, 4,344,063, Cl. 338-160.000.
Okada, Yoshifumi: *See*—
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, 4,343,083, Cl. 29-832.000.
Okamoto, Haruo: *See*—
Ohe, Takeshi; and Okamoto, Haruo, 4,343,324, Cl. 137-117.000.
Okubo, Shigeo, to Design Professionals Financial Corp. Dual function transducer utilizing displacement currents. 4,344,004, Cl. 307-400.000.
Okuda, Takao: *See*—
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.
Okumura, Akira, to Matsumoto, Tetsuo; and Okumura, Eiko. Method and device for separately collecting and discharging components of liquid in centrifugal rotor. 4,343,709, Cl. 210-782.000.
Okumura, Eiko: *See*—
Okumura, Akira, 4,343,709, Cl. 210-782.000.
Okuyama, Toshiaki; Kubota, Yuzuru; Nagase, Hiroshi; and Suzuki, Katsunori, to Hitachi, Ltd. Motor control system. 4,344,025, Cl. 318-729.000.
Old-North Manufacturing Company, Inc.: *See*—
Edwards, Ben E.; and Marr, Clyde M., 4,343,840, Cl. 427-351.000.
O'Leary, John B., to Grey-Mac Fitness, Ltd. Method of and apparatus for measuring the physical condition of a person. 4,343,315, Cl. 128-689.000.
Olin Corporation: *See*—
Gay, Walter A., 4,343,945, Cl. 548-128.000.
Katz, Lawrence E., 4,343,803, Cl. 424-251.000.
O'Connor, James M.; Lickei, Donald D.; and Sessions, Willie J., 4,343,916, Cl. 525-28.000.
Ollivier, Christian: *See*—
Francisoud, Jacques; and Ollivier, Christian, 4,343,668, Cl. 156-172.000.
O'Loughlin, Gary J.: *See*—
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
Oltman, John E.; and Dopp, Robert B., to Ray-O-Vac Corporation. Seal for metal-air batteries. 4,343,869, Cl. 429-27.000.
Olympus Optical Co., Ltd.: *See*—
Fujiwara, Toshihide; and Kaneko, Nobutaka, 4,343,991, Cl. 250-227.000.
Furuta, Kenzi, 4,344,095, Cl. 360-73.000.
Hattori, Shinichiro, 4,343,300, Cl. 128-6.000.
Mizokami, Kazunori, 4,343,541, Cl. 354-51.000.
Mizokami, Kazunori, 4,343,544, Cl. 354-149.000.
Onda, Yuuzi: *See*—
Saito, Masao; Onda, Yuuzi; and Murayama, Yuko, 4,343,722, Cl. 252-431.00N.
O'Neil, James W.: *See*—
Heiart, Robert B.; and O'Neil, James W., 4,343,876, Cl. 430-5.000.
O'Neil, Paul T., to National Steel Corporation. Jumper cable system for railway trains. 4,343,522, Cl. 339-10.000.
Ong, Kian K., to U.S. Philips Corporation. Tuning circuit. 4,344,186, Cl. 455-168.000.
Ono, Susumu: *See*—
Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, 4,343,273, Cl. 123-335.000.
Ono, Yoshihiro: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Onogi, Kenji, to Nippon Kogaku K.K. Apparatus for stopping the motor of a motor drive mechanism in a camera. 4,343,545, Cl. 354-173.000.
Oono, Shigeru: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.
Orii, Makoto: *See*—
Komatsu, Fumito; and Orii, Makoto, 4,343,221, Cl. 84-404.000.
Oronzio de Nora Impianti Elettrochimici S.p.A.: *See*—
de Nora, Oronzio; and Spaziante, Placido M., 4,343,689, Cl. 204-253.000.
de Nora, Oronzio, 4,343,690, Cl. 204-263.000.
Osborn, Charles, to JSJ Corporation. Pull-type lockout actuator for transmission shifters. 4,343,202, Cl. 74-476.000.
Oser, Nathan; and Niedzinski, Edmund J., to Manville Service Corporation. Deeply embossed sheet product. 4,343,866, Cl. 428-593.000.
Oshida, Yoshitada: *See*—
Nakagawa, Yasuo; Makihira, Hiroshi; Oshida, Yoshitada; and Akiyama, Nobuyuki, 4,343,553, Cl. 356-376.000.
Oshima, Mituyoshi; and Yoshimoto, Jun, to Shin-Etsu Chemical Co., Ltd.; and Sankio Chemical Co., Ltd. Method for the preparation of cis-alkylcyclohexanols. 4,343,955, Cl. 568-834.000.
Ostapovitch, Harold J., to Northern Telecom Limited. Apparatus, and a method, for removing terminal pins from a bandolier. 4,343,076, Cl. 29-426.500.
Ostertag, Karl: *See*—
Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, 4,343,602, Cl. 418-77.000.
Osthus, Ramon L., to Triad Service & Marketing, Ltd. Portable sign. 4,343,449, Cl. 248-156.000.
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, to Doryokuro Kaku Nenryo Kaihatsu Jigyodan. Method of fabricating an annular tank. 4,343,426, Cl. 228-170.000.
Ottewell, Gerald A., to Lucas Industries Limited. Friction pad assemblies for rail vehicle brakes. 4,343,382, Cl. 188-242.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Polymerized polyols of tetrahydropyrimidines. 4,343,930, Cl. 528-252.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., to Petrolite Corporation. Polyols of tetrahydropyrimidines. 4,343,941, Cl. 544-335.000.
Outboard Marine Corporation: *See*—
Blanchard, Clarence E., 4,343,612, Cl. 440-75.000.
Outlaw, Benjamin T.: *See*—
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,930, Cl. 528-252.000.
Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,941, Cl. 544-335.000.
Owens-Corning Fiberglas Corporation: *See*—
Bhatti, Mohinder S., 4,343,636, Cl. 65-1.000.
Kim, Kwan Y.; and Fracker, Clarence E., 4,343,635, Cl. 65-1.000.
Shofner, Frederick M.; Greene, Neil E.; and Hanna, Terry J., 4,343,637, Cl. 65-2.000.
Owler, William G., Jr.: *See*—
Daubman, Edward A.; and Owler, William G., Jr., 4,343,700, Cl. 210-232.000.
Oxendine, Luther C., Jr. Stabilizing apparatus for male and female partners. 4,343,299, Cl. 128-1.00R.
Oy Tampella AB: *See*—
Karru, Esa; Salmi, Pekka; and Paasonen, Hannu, 4,343,227, Cl. 91-276.000.
Ozaki, Kenji: *See*—
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.
Ozeki, Jiro, to Slidex Corporation. Thin-piece holding structure and a slide filing sheet using that structure. 4,343,106, Cl. 40-158.00B.
Paasonen, Hannu: *See*—
Karru, Esa; Salmi, Pekka; and Paasonen, Hannu, 4,343,227, Cl. 91-276.000.
Padco, Inc.: *See*—
Rawlings, Robert M., 4,344,073, Cl. 340-675.000.
Padgett, Howard J.: *See*—
Hahn, Kurt L.; Padgett, Howard J.; and Rao, Manjeshwar S., 4,343,174, Cl. 72-349.000.
Page, Philip R.: *See*—
Villax, Ivan; and Page, Philip R., 4,343,739, Cl. 260-397.450.
Pallone, Thomas J.: *See*—
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Palmer, John P., to General Dynamics, Pomona Division. Dual directional wavelength demultiplexer. 4,343,532, Cl. 350-96.190.
Panicali, Natalino, to Motorola, Inc. Start-up timer for a switching power supply. 4,344,124, Cl. 363-49.000.
Panik, Ferdinand, to Daimler-Benz Aktiengesellschaft. Device for indication of operational and computed values. 4,344,136, Cl. 364-424.000.
Panofski, Ernst: *See*—
Hoffmann, Roland; and Panofski, Ernst, 4,344,016, Cl. 313-489.000.
Pao, Henry C.; Blanchard, Richard A.; and Choy, Benedict C. K., to Supertex, Inc. Combined DMOS and a vertical bipolar transistor device and fabrication method therefor. 4,344,081, Cl. 357-43.000.
Pao, Shing-Chong: *See*—
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang, 4,343,962, Cl. 136-255.000.
Papst Motoren KG: *See*—
von der Heide, Johann, 4,344,022, Cl. 318-38.000.
Paquette, Edmund T.: *See*—
Moriarty, Frederick J.; and Paquette, Edmund T., 4,343,244, Cl. 108-1.000.

Pargamin, Laurent, to Ceraver. Electric line insulator made of organic material and having an inner semi-conductive part extending between end anchor fittings. 4,343,966, Cl. 174-140.00S.
Parshall, David G., to AMSTED Industries Incorporated. High pressure flat bed filter. 4,343,701, Cl. 210-387.000.
Pasarela, Nunzio R., to American Cyanamid Company. Controlled release acrylic polymer coated granular pesticidal compositions with attendant reduced dermal toxicity. 4,343,790, Cl. 424-81.000.
Patel, Natvarlal K.; and Plaisted, Anthony C., to Celtite, Inc. Two component device for use in anchor bolting and method of anchoring. 4,343,399, Cl. 206-222.000.
Patelhold Patentverwertungs- & Elektro-Holding AG: *See*—
Snedkerud, Ole, 4,344,169, Cl. 370-40.000.
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Hoffmann, Roland; and Panofski, Ernst, 4,344,016, Cl. 313-489.000.
Patterson, Robert J., II: *See*—
Holiday, Paul R.; and Patterson, Robert J., II, 4,343,750, Cl. 264-8.000.
Paule, Helmut, to Prime Marketing Group, Inc. Shutter slat configuration. 4,343,340, Cl. 160-232.000.
Paulyson, John T., to United States Lines, Inc. Automobile containerized shipment support kit. 4,343,401, Cl. 206-577.000.
Pavelec, Frank L.: *See*—
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.
Pavlow, Roger; and Frentzel, Herman E., to Pavlow, Roger. Machine for encapsulating food in dough. 4,343,603, Cl. 425-114.000.
Paysinger, Joseph R., to Crutcher Corporation. Tool for spiral machining. 4,343,207, Cl. 82-4.00R.
Peffer, John R.: *See*—
Chang, Wen-Hsuan; O'Dwyer, James B.; and Peffer, John R., 4,343,925, Cl. 525-440.000.
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, to Brennstoffinstitut Freiberg; and Gosudarstwennyi Nautschno-Issledowatelskij i Projektnyi Institut Astonoj Promyschlennosti i Produktow Organitscheskogo Sintesa. Reactor for producing a carbon monoxide and hydrogen containing gas. 4,343,626, Cl. 48-67.000.
Pelov, Iran P.; and Penman, Brian R., to Exxon Research & Engineering Co. Apparatus for dispensing a liquid additive. 4,343,326, Cl. 137-454.000.
Penman, Brian R.: *See*—
Pelov, Iran P.; and Penman, Brian R., 4,343,326, Cl. 137-454.000.
Pennsylvania Crusher Corporation: *See*—
Slikas, Anthony W.; and Nigro, Joseph P., 4,343,438, Cl. 241-196.000.
Pennwalt Corporation: *See*—
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Perkin-Elmer Corporation, The: *See*—
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Perry, Derick A., to Rolls-Royce Limited. Bladed rotor for a gas turbine engine. 4,343,594, Cl. 416-193.00A.
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Landrum, Ralph A., Jr.; Vallhonrat, Juan B.; and Perry, Paul M., 4,344,158, Cl. 367-73.000.
Persson, Karl R., to Sprinter System AB. Tray with handles. 4,343,428, Cl. 229-31.00R.
Persson, Nils C., to Inventor Invest AB. Decomposition container, especially a decomposition latrine. 4,343,051, Cl. 4-111.100.
Perzanowski, William J.: *See*—
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Petranto, Joseph J., to United States of America, Energy. Split gland. 4,343,496, Cl. 285-39.000.
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Lawrence, Rodney G.; and Morelli, Patrick T., 4,343,863, Cl. 428-485.000.
Martin, Richard L., 4,343,660, Cl. 148-6.14R.
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Oude Alink, Bernardus A.; and Outlaw, Benjamin T., 4,343,941, Cl. 544-335.000.
Quinlan, Patrick M., 4,343,720, Cl. 252-390.000.
Petrov, Alexander S., to Vmei "Lenin" - Centar Po Robotika. Power press. 4,343,175, Cl. 72-452.000.
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Kimball, Paul A., 4,343,575, Cl. 406-19.000.
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., to RCA Corporation. Method for making planar optical waveguide comprising thin metal oxide film incorporating a relief phase grating. 4,343,890, Cl. 430-321.000.
Pickens, Jay W.; and Warren, Linton G., to Rangaire Corporation. Translucent plastic lampshade. 4,344,115, Cl. 362-216.000.
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Pioneer Electronic Corporation: *See*—
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,344,098, Cl. 360-96.600.
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Pompei, Francesco, to Exergen Corporation. Radiation heat loss detector. 4,343,182, Cl. 374-31.000.
Ponstein, William M. Mobile conveyor. 4,343,389, Cl. 198-316.000.
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Poppendiek, Heinz F., to United States of America, Energy. Method for determining thermal conductivity and thermal capacity per unit volume of earth in situ. 4,343,181, Cl. 73-154.000.
Popplewell, Frank W., to Dunlop Limited. Method of making game racket frame. 4,343,757, Cl. 264-221.000.
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Edge, Charles K., 4,343,642, Cl. 65-99.500.
Norton, W. Jack, 4,343,961, Cl. 136-230.000.
Sickles, James E., 4,343,433, Cl. 239-3.000.

Prame, Eric S., to International Business Machines Corp. Method and apparatus for character generation. 4,344,069, Cl. 340-365.00S.
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Hildebrand, Donald L.; and Prescott, Ernest F., 4,343,060, Cl. 15-84.000.
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Bako, Lazlo, 4,343,165, Cl. 70-312.000.
Scelba, Stephen S.; and Bako, Lazlo, 4,343,163, Cl. 70-312.000.
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Procter & Gamble Company, The: *See—*
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Prooi, Jacob J.; Sep, Waltherus J.; and Westerhof, Wilhelmina, to Internationale Octrooi Maatschappij "Octropa" BV. Unsaturated polyester composition. 4,343,932, Cl. 528-303.000.
Prozorov, Valery I.: *See—*
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Pruett, Roy L.: *See—*
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Pucci, Donald G.; and Everly, Ralph T., to General Electric Company. Epoxy resin composition and process for production. 4,343,731, Cl. 523-427.000.
Pugh, Paul F. Method for manufacturing SF_6 pressurized gas continuous spacer cable. 4,343,665, Cl. 156-48.000.
Pullman Incorporated: *See—*
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Purdon, Jerome R. Deburring tool. 4,343,577, Cl. 408-226.000.
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PureCycle Corporation: *See—*
Blades, Frederick K., 4,343,552, Cl. 356-339.000.
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Quinlan, Patrick M., to Petrolite Corporation. Quaternary alkynoxymethyl amines. 4,343,720, Cl. 252-390.000.
Qureshi, Shahid U. H., to Codex Corporation. Time recovery circuitry in a modem receiver. 4,344,176, Cl. 375-15.000.
Rabette, Jean Y.: *See—*
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Radek, John R., to Ready Metal Manufacturing Company. Napkin dispenser. 4,343,415, Cl. 221-59.000.
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Radiation Measurements, Inc.: *See—*
Jacobson, Donald R., 4,344,183, Cl. 378-207.000.
Ragot, Philippe: *See—*
Ambille, Georges; Bacconnet, Eugene; and Ragot, Philippe, 4,343,298, Cl. 126-450.000.
Ragsdale, Charles W., to Cavitron Corporation. System and method for analyzing tonosignals. 4,344,037, Cl. 328-114.000.
Rajagopal, Ganesh; and Basrai, Habil S., to Ford Motor Company. Electrically operated hydraulic power lift system. 4,343,365, Cl. 172-4.000.
Rampf KG Formen GmbH & Co.: *See—*
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Ramspacher, Robert J., Jr.: *See—*
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Danko, Michael J.; Randall, Leslie L.; Smith, Ray J.; and Walsh, James E., 4,343,190, Cl. 73-846.000.
Randolph, Byron B., Jr., to Gardiner, Robert F. Selective/ground neutralizing metal detector. 4,344,034, Cl. 324-329.000.
Rangaire Corporation: *See—*
Pickens, Jay W.; and Warren, Linton G., 4,344,115, Cl. 362-216.000.
Rantanen, Mikko; Tuomi, Alpo; and Laiho, Reino, to Rauma-Repola Oy. Method and equipment for thickening of suspension or pulp. 4,343,708, Cl. 210-744.000.
Rao, Manjeshwar S.: *See—*
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Rauma-Repola Oy: *See—*
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Ray-O-Vac Corporation: *See—*
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Oltman, John E.; and Dopp, Robert B., 4,343,869, Cl. 429-27.000.
RCA Corporation: *See—*
Bleazey, John C.; and Guarracini, Joseph, 4,344,166, Cl. 369-216.000.
Corsover, Stephen L.; Dobbins, Lawrence W.; and Pierson, Paul B., 4,344,088, Cl. 358-132.000.
Harford, Jack R., 4,344,043, Cl. 330-254.000.
Harford, Jack R., 4,344,044, Cl. 330-254.000.
Harmon, Joseph W.; and Atherton, James H., 4,344,003, Cl. 307-296.00A.
Johnston, Loren B., 4,344,021, Cl. 315-383.000.
Marschka, Frank D., 4,344,015, Cl. 313-466.000.
Phillips, William; Neil, Clyde C.; and Hammer, Jacob M., 4,343,890, Cl. 430-321.000.
Rudy, John E., 4,344,075, Cl. 340-703.000.
Stewart, Roger G., 4,344,005, Cl. 307-463.000.
Tarng, Ming L., 4,343,676, Cl. 156-628.000.
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Reactor Services International, Inc.: *See—*
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Ready Metal Manufacturing Company: *See—*
Radek, John R., 4,343,415, Cl. 221-59.000.
Reardon, Edward J., Jr., to Dynachem Corporation. Phototropic photosensitive compositions containing fluoran colorformer. 4,343,885, Cl. 430-177.000.
Reavis, Robert P., Jr.; and Weisenburger, Lawrence P., to AMP Incorporated. Terminal block with self locking terminal. 4,343,529, Cl. 339-198.00R.
Reda, Emil T. Flushing nozzle and dilater for colostomy irrigation. 4,343,307, Cl. 128-239.000.
Redicon Corporation: *See—*
Bulso, Joseph D., Jr.; and Lewers, William R., 4,343,173, Cl. 72-345.000.
Reed, Geoffrey R.: *See—*
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Reed, Paul A.: *See—*
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Reed, Wilmer H., III, to United States of America, National Aeronautics and Space Administration. Decoupler pylon: wing/store flutter suppressor. 4,343,447, Cl. 244-137.00R.
Reese, Eckart: *See—*
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Rehder, Richard A.: *See—*
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Reichhold Chemicals Incorporated: *See—*
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Reichmanis, Elsa; and Wilkins, Cletus W., Jr., to Bell Telephone Laboratories, Incorporated. Process of exposing and developing terpolymer photosensitive bodies. 4,343,889, Cl. 430-311.000.
Reilly, James P.; and Haykin, Simon, to Canadian Patents & Development Limited. Method and apparatus for providing the in-phase and quadrature components of a bandpass signal. 4,344,040, Cl. 329-50.000.
Reining, Karl: *See—*
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Reliance Electric Company: *See—*
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Republic Steel Corporation: *See—*
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Research Corporation: *See—*
Issidorides, Costas H.; and Haddadin, Makhluf J., 4,343,942, Cl. 544-354.000.
Research Council of Alberta: *See—*
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Research Foundation of City University of New York: *See*—
Ronn, Avigdor M., 4,343,687, Cl. 204-157.10R.
Reusser, Fritz; and Malik, Vedpal S., to Upjohn Company, The. Hybrid plasmid of pBR322 and Streptomyces plasmid and *E. coli* containing same. 4,343,906, Cl. 435-253.000.
Reuter, Rene F., to Goodyear Tire & Rubber Company, The. Elongatable reinforcement cord for an elastomeric article. 4,343,343, Cl. 152-359.000.
Reynolds, Kenneth R., to General Electric Co. Brush wear indicator for a dynamoelectric machine brush. 4,344,009, Cl. 310-242.000.
Rheological Systems, Inc.: *See*—
Brown, Robert, 4,343,670, Cl. 156-233.000.
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Soula, Gerard, 4,343,745, Cl. 260-429.00J.
Ribeiro de Almeida, A. A., to Inter-Hydraulik GmbH, Firma. Arrangement for hydraulic presses and bending presses. 4,343,226, Cl. 91-171.000.
Rice, Stuart L., to Caterpillar Tractor Co. Method of making a low temperature bainite steel alloy gear. 4,343,661, Cl. 148-134.000.
Rich, Dennis J.: *See*—
Adams, James H.; Rich, Dennis J.; and Holtz, Frederick C., Jr., 4,343,909, Cl. 501-98.000.
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Ricoh Company, Ltd.: *See*—
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Riedel, Erich O., to Riedel-Technik GmbH. Apparatus for cleaning the inside faces of pipes or tubes. 4,343,702, Cl. 210-391.000.
Riedel, Erich O., to Riedel-Technik GmbH. Apparatus for cleaning the interior faces of pipes or tubes. 4,343,703, Cl. 210-391.000.
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Riedel, Erich O., 4,343,702, Cl. 210-391.000.
Riedel, Erich O., 4,343,703, Cl. 210-391.000.
Rieter Machine Works Ltd.: *See*—
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Riggs, Emmet D.; Brownscombe, Eugene R.; and Bilhartz, James R., to Sonics International, Inc. Method and apparatus for treating subsurface boreholes. 4,343,356, Cl. 166-60.000.
Rikis, Vitolds: *See*—
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Riley, Robert E.: *See*—
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Rimawi, Isam: *See*—
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Rink, Norbert: *See*—
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Rist, Charles A., Jr.: *See*—
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Ritter, Terry F.: *See*—
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RIV-SKF Officine di Villar Perosa S.p.A.: *See*—
Bertone, Enrico, 4,343,520, Cl. 308-178.000.
Rivers, Ronald D., to Cabot Corporation. Metal binder in compaction of metal powders. 4,343,650, Cl. 75-213.000.
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Herden, Werner; and Neu, Hans, 4,343,180, Cl. 73-115.000.
Plapp, Gunther, 4,343,183, Cl. 73-204.000.
Schadlich, Fritz, 4,343,214, Cl. 83-543.000.
Stabler, Manfred; and Schadlich, Fritz, 4,343,115, Cl. 51-268.000.
Robertshaw Controls Company: *See*—
Beggs, James H., 4,344,066, Cl. 340-310.00A.
Rockwell International Corporation: *See*—
Cook, Carroll J.; and Henthorn, Timothy K., 4,344,185, Cl. 455-110.000.
White, Stanley A., 4,344,151, Cl. 364-754.000.
Roda, Jan; and Kralicek, Jaroslav, to Vysoka skola chemicko-technologicka. Process for the anionic polymerization of 2-pyrrolidone with fast freezing step. 4,343,933, Cl. 528-312.000.
Roder, Albert: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.
Rodon, Guenter, to Rampf KG Formen GmbH & Co. Mould for producing concrete mouldings. 4,343,453, Cl. 249-120.000.
Rogers, Edward S.; and Tu, Hosheng, to UOP Inc. Catalytic composite from partially crystallized clay. 4,343,723, Cl. 252-455.00Z.
Rogers, Raymond W.: *See*—
Wilson, Robert G.; and Rogers, Raymond W., 4,343,985, Cl. 219-214.000.
Rohrer, Heinrich: *See*—
Binnig, Gerd; and Rohrer, Heinrich, 4,343,993, Cl. 250-306.000.
Roller, Hanno; Ohnmacht, Helmut; Lieber, Ludwig; and Nauerth, Karl-Heinz, to Fritz Eichenauer, Firma. Electrical resistance water heating device, particularly for beverage preparation machines. 4,343,988, Cl. 219-302.000.
Rolls Royce Limited: *See*—
Langley, Kenneth R., 4,343,446, Cl. 244-12.500.
May, Gordon C., 4,343,592, Cl. 415-171.000.
Perry, Derick A., 4,343,594, Cl. 416-193.00A.
Scott-Scott, John L., 4,343,611, Cl. 440-45.000.
Roman, Daniel J.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
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Jurecic, Anton; and Romano, James V., 4,343,418, Cl. 222-386.000.
Ronn, Avigdor M., to Research Foundation of City University of New York. Production of chain reactions by laser chemistry. 4,343,687, Cl. 204-157.10R.
Rose, Peter W. Process for preparing meat products having reduced shrinkage. 4,343,821, Cl. 426-247.000.
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Roseman, Arnold S., to CFS Continental, Inc. Free-flowing, sweetened, hydrated, coconut particles and method for preparing same. 4,343,820, Cl. 426-103.000.
Rosen, Howard N.; Bodkin, Robert E.; and Gaddis, Kenneth D., to United States of America, Agriculture. Pressure dryer for steam seasoning lumber. 4,343,095, Cl. 34-16.500.
Rosenberry, George M., Jr.: *See*—
Liebermann, Howard H.; Frischmann, Peter G.; and Rosenberry, George M., Jr., 4,343,347, Cl. 164-463.000.
Ross, Donald N.; Bodnar, Endre; and Hoskin, William J. Stent for a cardiac valve. 4,343,048, Cl. 3-1.500.
Rowan, Robert A.; and Mathis, Leroy. Silage wagon. 4,343,511, Cl. 298-6.000.
Rowland, Stanley P.: *See*—
Wade, Clinton P.; and Rowland, Stanley P., 4,343,070, Cl. 19-40.000.
Rubichev, Nikolai A.: *See*—
Bank, Mikhail U.; Prozorov, Valery I.; and Rubichev, Nikolai A., 4,344,028, Cl. 324-57.00N.
Ruderman, Stephen: *See*—
Ellis, James B.; Lisiecki, Mieczyslaw J.; and Ruderman, Stephen, 4,343,392, Cl. 198-484.000.
Rudhard, Heinz: *See*—
Brenik, Wenzel; and Rudhard, Heinz, 4,343,318, Cl. 131-300.000.
Rudolph, Otfried; Peter, Gunter; Fischer, Karlheinz; and Hefftler, Victor, to Veb Kombinat Polygraph "Werner Lamberz" Leipzig. Control device for suction gripper systems in sheet guiding cylinders. 4,343,241, Cl. 101-231.000.
Rudy, John E., to RCA Corporation. Timing circuit for the digital generation of composite luminance and chrominance video signal for non-interlaced television raster scan-line pattern. 4,344,075, Cl. 340-703.000.
Ruediger, Dennis W. Supplemental identification system for channel and similar marker lights. 4,344,110, Cl. 362-32.000.
Rundquist, Hans M.; and Skold, Tore G., to Studsvik Energiteknik AB. Lamp device for underwater use. 4,344,118, Cl. 362-267.000.
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., to Bendix Corporation, The. Fluid actuator. 4,343,225, Cl. 91-52.000.
Rupprecht, Eckhard: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Russell, Ian M.: *See*—
Jones, Francis W.; Mayfield, Robert J.; O'Loughlin, Gary J.; and Russell, Ian M., 4,343,618, Cl. 8-128.00R.
Russo, John A.: *See*—
Busch, Francis W., Jr.; Pallone, Thomas J.; Berube, Gene R.; Vyas, Ambrish H.; Faryniarz, Joseph R.; and Russo, John A., 4,343,910, Cl. 521-82.000.
Rustenburg, Conrad M.: *See*—
Jacobson, Peter E.; and Rustenburg, Conrad M., 4,343,203, Cl. 74-5.00R.
Ruthmansdorfer, David A.: *See*—
Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., 4,343,268, Cl. 123-90.400.
Ruud, Alan J.; and Lewin, Ian, to McGraw-Edison Company. High efficiency lighting units and systems using same. 4,344,111, Cl. 362-33.000.
Ryan, Carl R., to Motorola Inc. Clock synchronizer and data detector. 4,344,179, Cl. 375-110.000.
Rydland, Kjell: *See*—
Bockman, Ole K.; and Rydland, Kjell, 4,343,352, Cl. 165-104.160.
Ryoko Electronic Industries Ltd.: *See*—
Eguchi, Kazuo; Kobayashi, Tadashi; and Miyake, Yukiharu, 4,343,960, Cl. 136-225.000.
Ryu, Yumi P.; Singerman, Gary M.; and Anglin, James R., to Gulf Research & Development Company. Preparation of quaternary ammonium thiomolybdates. 4,343,747, Cl. 260-429.00R.
Ryu, Yumi P.: *See*—
Anglin, James R.; Ryu, Yumi P.; and Singerman, Gary M., 4,343,746, Cl. 260-429.00R.

S&C Electric Company: *See*—
Swanson, Roy T., 4,344,059, Cl. 337-174.000.
Sack, Berthold: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, to Canon Kabushiki Kaisha. Electronic calculator with printer. 4,344,147, Cl. 364-710.000.
Sado, Ryoichi, to Shin-Etsu Polymer Co., Ltd. Key board switch unit with illumination. 4,343,975, Cl. 200-314.000.
Sadones, Henri: *See*—
Chekroun, Claude; Michel, Yves C.; and Sadones, Henri, 4,344,077, Cl. 343-754.000.
Sah, Chin-Tang: *See*—
Neugroschel, Arnost; Pao, Shing-Chong; Lindholm, Fred A.; Fossum, Jerry G.; and Sah, Chin-Tang, 4,343,962, Cl. 136-255.000.
St. Denis, C. Earl: *See*—
Kessick, Michael A.; and St. Denis, C. Earl, 4,343,323, Cl. 137-13.000.
Saito, Hiromitsu: *See*—
Hirata, Tadashi; Saito, Hiromitsu; and Nakamizo, Nobuhiro, 4,343,943, Cl. 546-183.000.
Saito, Masao; Onda, Yuuzi; and Murayama, Yuko, to Mitsubishi Gas Chemical Company, Inc. Process for producing catalyst. 4,343,722, Cl. 252-431.00N.
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, to TDK Electronics Co., Ltd. Process for preparing magnetic recording medium. 4,343,834, Cl. 427-132.000.
Sakamoto, Kohichiro: *See*—
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,343,197, Cl. 73-862.650.
Salmi, Pekka: *See*—
Karru, Esa; Salmi, Pekka; and Paasonen, Hannu, 4,343,227, Cl. 91-276.000.
Saltzman, Edwin J., to United States of America, National Aeronautics and Space Administration. Low-drag ground vehicle particularly suited for use in safely transporting livestock. 4,343,506, Cl. 296-1.00S.
Samson Aktiengesellschaft: *See*—
Kemmler, Lothar, 4,343,224, Cl. 91-47.000.
Samuelson, Donald G.; and Farris, Paul R., to Club Car Inc. Snap-on windshield for golf carts and like vehicles. 4,343,503, Cl. 296-84.00D.
Sandin, Gus: *See*—
Alworth, James; Kennedy, John C.; La Barre, Berger; and Sandin, Gus, 4,343,200, Cl. 74-57.000.
Sandvik Aktiebolag: *See*—
Lagerholm, Kurt; and Faber, Kurt H. A. E., 4,343,576, Cl. 408-155.000.
Sangamo-Weston, Inc.: *See*—
Lewis, Terence O., 4,344,076, Cl. 340-825.170.
Sankio Chemical Co., Ltd.: *See*—
Oshima, Mituyoshi; and Yoshimoto, Jun, 4,343,955, Cl. 568-834.000.
Sansbury, Jerry F., to Sonoco Products Company. Composite container with balloon fold. 4,343,427, Cl. 229-4.500.
Santilli, James N.: *See*—
Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., 4,344,105, Cl. 361-328.000.
Sanwa Shutter Corporation: *See*—
Kagawa, Tokiyoshi, 4,343,171, Cl. 72-181.000.
Sanyo Electric Co., Ltd.: *See*—
Koyama, Hideaki, 4,343,977, Cl. 219-10.55B.
Sugiura, Youji; and Nishimura, Satoshi, 4,344,039, Cl. 329-50.000.
Sardisco, John B., to Pennzoil Company. Decomposition of 2KCl.CuCl to produce cuprous chloride and potassium chloride. 4,343,781, Cl. 423-493.000.
Sarma, Kalluri R.; and Legge, Ronald N., to Motorola, Inc. Method for improving the efficiency of solar cells having imperfections. 4,343,830, Cl. 427-38.000.
Sarofim, Adel F.: *See*—
Blair, David W.; Bartok, William; Longwell, John P.; and Sarofim, Adel F., 4,343,606, Cl. 431-10.000.
Sartori, Guido: *See*—
Melchior, Michael T.; Milliman, George E.; and Sartori, Guido, 4,343,716, Cl. 252-192.000.
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, to Euteco Impianti S.p.A. Process for the production of cumene. 4,343,957, Cl. 585-449.000.
Sartorius GmbH: *See*—
Stadler, Eberhard; and Blawert, Dieter, 4,343,373, Cl. 177-50.000.
Sarver, Robert B.; and Arthur, W. Eugene, to Cunningham, Robert D.; and West, Byron F., a part interest to each. Self-erecting roadway marking post. 4,343,567, Cl. 404-10.000.
Sasaki Co., Ltd.: *See*—
Sasaki, Kyozo, 4,343,097, Cl. 36-3.00A.
Sasaki, Kyozo, to Sasaki Co., Ltd. Shoes. 4,343,097, Cl. 36-3.00A.
Sasaki, Masayuki: *See*—
Sado, Ichiro; Cho, Mitsuo; Kishimoto, Juji; and Sasaki, Masayuki, 4,344,147, Cl. 364-710.000.
Sasaki, Yoshitaka, to Hitachi Metals, Ltd. Pressure-fixation apparatus. 4,343,234, Cl. 100-158.00R.
Sasaoka, Senzo, to Fuji Photo Film Company, Ltd. Photographic light-sensitive silver halide elements. 4,343,873, Cl. 430-1.000.
Sassiver, Martin L.; and Boothe, James H., to American Cyanamid Company. 7-[Dα-(Coumarin-3-carboxamido)arylacetamido]-cephalosporanic acids or salts. 4,343,938, Cl. 544-27.000.
Sato, Hideo: *See*—
Kawamura, Kouichi; Katsuyama, Harumi; and Sato, Hideo, 4,343,948, Cl. 549-13.000.
Satoh, Hisashi: *See*—
Akabane, Yukihiro; Satoh, Hisashi; Shiraiwa, Yukio; and Tsuchiya, Shuyou, 4,343,521, Cl. 308-193.000.
Satoh, Mitsuharu; and Aiso, Katsuyoshi, to Toshiba Kikai Kabushiki Kaisha. Automatic tool exchanging apparatus of machine tool. 4,343,077, Cl. 29-568.000.
Satoh, Yoshiaki: *See*—
Watanabe, Ichiro; and Satoh, Yoshiaki, 4,343,899, Cl. 435-129.000.
Sauer, Hans: *See*—
Nagamoto, Mitsuki; and Kobayashi, Nobuo, 4,344,103, Cl. 361-160.000.
Sauermilch, Otto, to William Prym-Werke KG. Machine with finger protection guard. 4,343,423, Cl. 227-1.000.
Saunders, Robert M.: *See*—
Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., 4,343,754, Cl. 264-154.000.
Saussine, Lucien: *See*—
Julia, Marc; and Saussine, Lucien, 4,343,952, Cl. 568-28.000.
Sauter, Robert: *See*—
Hurnaus, Rudolf; Griss, Gerhart; Grell, Wolfgang; Sauter, Robert; Eisele, Bernhard; Kaubisch, Nikolaus; Rupprecht, Eckhard; and Kahling, Joachim, 4,343,811, Cl. 424-274.000.
Savin Corporation: *See*—
Sher, Arden; and Mooney, John B., 4,343,881, Cl. 430-57.000.
Sawada, Satoru: *See*—
Nakamura, Kotaro; Kubodera, Seiiti; Sawada, Satoru; Hara, Hiroshi; Suzuki, Yoshiaki; and Oono, Shigeru, 4,343,886, Cl. 430-237.000.
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing thermal head. 4,343,833, Cl. 427-96.000.
Scelba, Stephen S.; and Bako, Lazlo, to Presto Lock, Inc. Combination lock with scramble feature. 4,343,163, Cl. 70-312.000.
Schadlich, Fritz, to Robert Bosch GmbH. Arrangement for fastening a circular saw blade on a trunnion axially projecting from a drive shaft. 4,343,214, Cl. 83-543.000.
Schadlich, Fritz: *See*—
Stabler, Manfred; and Schadlich, Fritz, 4,343,115, Cl. 51-268.000.
Schaefer, David V.; and Hamkins, Clark J., to Tenneco Inc. Ball movement coordinator and cam member for torque responsive hub clutch. 4,343,386, Cl. 192-54.000.
Schaefer, William E.: *See*—
Breza, Cyril J., deceased; and Schaefer, William E., 4,343,663, Cl. 149-4.000.
Schafer, Kenneth L.; and Peterson, Maurice L. Animal watering apparatus. 4,343,264, Cl. 119-73.000.
Schafer, Paul: *See*—
Abel, Heinz; and Schafer, Paul, 4,343,620, Cl. 8-557.000.
Schaub, Robert E.: *See*—
Bernady, Karel F.; Floyd, Middleton B., Jr.; Poletto, John F.; Schaub, Robert E.; and Weiss, Martin J., 4,343,949, Cl. 562-503.000.
Schiff, Otto M.; and Rikis, Vitolds, to Schiff Photo Mechanics. Multiple image roll film camera. 4,343,543, Cl. 354-124.000.
Schiff Photo Mechanics: *See*—
Schiff, Otto M.; and Rikis, Vitolds, 4,343,543, Cl. 354-124.000.
Schimbke, Paul A.; and Williams, Stanley A., to Aqua-Chem, Inc. Electric boiler. 4,343,987, Cl. 219-287.000.
Schingnitz, Manfred: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.
Schlegel Corporation: *See*—
Burden, Martin J.; and Williams, Richard C., 4,343,845, Cl. 428-122.000.
Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. Duplicating and marking systems. 4,343,493, Cl. 282-27.500.
Schmitt, Frederick L.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,343,791, Cl. 424-84.000.
Schmolka, Irving R., to BASF Wyandotte Corporation. Gel dentifrice compositions. 4,343,785, Cl. 424-49.000.
Schnapp, Herbert, to Interatom Internationale Atomreaktorbau GmbH. Vibration pickup. 4,343,186, Cl. 73-649.000.
Schneider, Fred J.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.
Schneider, Klaus: *See*—
Meywald, Volker; Ostertag, Karl; and Schneider, Klaus, 4,343,602, Cl. 418-77.000.
Schneider, Urban A.; and Nelson, Robert L., to Westinghouse Electric Corp. Non-consumable composite welding electrode. 4,343,983, Cl. 219-145.210.
Scholes, Addison B., to Ball Corporation. Article having a scratch resistant lubricated glass surface and its method of manufacture. 4,343,641, Cl. 65-60.200.

Schonmann, Gerhard: *See*—
Sommer, Klaus; Klemm, Walter; Weber, Hermann; Meinhardt, Frederich; Schonmann, Gerhard; and Spatz, Wilhelm, 4,343,779, Cl. 423-305.000.

Schornack, Louis W.; and Goldstein, Richard, to Dynascan Corporation. Power circuit control programmable timer. 4,344,000, Cl. 307-132.00E.

Schott Glaswerke: *See*—
Faulstich, Marga; and Geiler, Volmar, 4,343,908, Cl. 501-78.000.

Schramm, Walter: *See*—
Kick, Helmut; Kistenmacher, Hans; Schramm, Walter; Hoerner, Berndt; and Lang, Udo, 4,343,633, Cl. 62-23.000.

Schroder, Bruno: *See*—
Clermont, Heinrich; Forster, Siegfried; Heil, Jurgen; Quell, Peter; Singh, Jasbir; Sack, Berthold; and Schroder, Bruno, 4,343,681, Cl. 376-293.000.

Schroder, William J., to Milliken Research Corporation. Air treatment jet for yarn. 4,343,071, Cl. 28-254.000.

Schromm, Kurt: *See*—
Kope, Herbert; Mentrup, Anton; Renth, Ernst-Otto; Schromm, Kurt; Hoefke, Wolfgang; and Muacevic, Gojko, 4,343,800, Cl. 424-248.500.

Schuller, Kurt: *See*—
Leiter, Berndt; Keller, Josef; Schuller, Kurt; and Eisend, Ewald, 4,343,613, Cl. 474-82.000.

Schulte, Heinrich, to Klockner-Werke AG. Drive sprocket wheel. 4,343,614, Cl. 474-155.000.

Schulz, Horst; Jentzsch, Arndt; Kuhnert, Werner; Fink, Heiner; Junker, Frank; Lehmann, Gunter; Johne, Hans; Kahlert, Peter; and Dittmann, Norbert, to VEB Kombinat Polygraph "Werner Lamberz" Leipzig. Bearing for the cylinders of printing machines. 4,343,519, Cl. 308-37.000.

Schulze, Christian; and Plein, Hans-Joachim, to Hoechst Aktiengesellschaft. Jeans fabric comprising open sheath core friction spun yarns and process for its manufacture. 4,343,334, Cl. 139-420.00R.

Schum, Vaughn J., Jr.: *See*—
Beach, Bradley L.; Gates, Paul D.; and Schum, Vaughn J., Jr., 4,343,653, Cl. 106-22.000.

Schumacher, Berthold W., to Ford Motor Company. Low ripple D.C. power supply. 4,344,126, Cl. 363-126.000.

Schuster, Hans-Dieter: *See*—
Abthoff, Jorg; Schuster, Hans-Dieter; Langer, Hans-Joachim; and Gabler, Rolf, 4,343,149, Cl. 60-311.000.

Schwartz, Anne L.: *See*—
Lenox, Ronald S.; and Schwartz, Anne L., 4,343,923, Cl. 525-426.000.

Schwartz, Robert E.: *See*—
Dinsmore, Harold L.; Schwartz, Robert E.; and Tuttle, Willard N., 4,343,629, Cl. 55-28.000.

Schwartz, Stephan; Soderstrom, Roland; and Bjareklint, Ake, to Energy Development Associates, Inc. Method of joining metal to graphite by spot welding. 4,343,982, Cl. 219-118.000.

Schwarzenbach, Alfred, to BBC Brown Boveri & Co. Ltd.,. Apparatus for preventing blowing out of the water supply of constant pressure air storage installations of gas turbine power plants. 4,343,569, Cl. 405-53.000.

Schwertfeger, Werner: *See*—
Muffler, Herbert; Siegemund, Gunter; and Schwertfeger, Werner, 4,343,742, Cl. 549-380.000.
Siegemund, Gunter; and Schwertfeger, Werner, 4,343,749, Cl. 260-543.00F.

Schwindt, Jurgen; Ganster, Otto; and Meiners, Hans-Joachim, to Bayer Aktiengesellschaft. Process for the production of tires comprising vulcanized elastomers containing urethane groups. 4,343,339, Cl. 152-209.00R.

Schwing, Friedrich; and Schwing, Gerhard, to Friedrich Wilh. Schwing GmbH. Viscous material pump, particularly for concrete. 4,343,598, Cl. 417-517.000.

Schwing, Gerhard: *See*—
Schwing, Friedrich; and Schwing, Gerhard, 4,343,598, Cl. 417-517.000.

SCM Corporation: *See*—
Abbey, Kirk J., 4,343,915, Cl. 523-414.000.
Bonsack, James P., 4,343,775, Cl. 423-78.000.
DuRoss, Robert M.; and Stuhler, Robert J., 4,343,557, Cl. 400-496.000.

Score, Robert E.: *See*—
McCormick, Lloyd G.; and Score, Robert E., 4,343,131, Cl. 53-397.000.

Scott, Robert F. Retrieval and storage device for flexible elements. 4,343,420, Cl. 226-49.000.

Scott-Scott, John L., to Rolls-Royce Limited. Marine propulsion. 4,343,611, Cl. 440-45.000.

Scourtes, George, to Allen Group, The. Apparatus and methods for simulating varying atmospheric conditions. 4,343,348, Cl. 165-1.000.

Scudder, Jonathan K.: *See*—
Hawke, Ronald S.; Scudder, Jonathan K.; and Aaland, Kristian, 4,343,223, Cl. 89-8.000.

Scurlock, Scot L.: *See*—
Lyons, William C.; Scurlock, Scot L.; and Zublin, Edward A., 4,343,369, Cl. 175-75.000.

Seibel, James K.: *See*—
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.

Seidel, Hans: *See*—
Beaucamp, Klaus; Nelboeck, Michael; Gauhl, Helmgard; Seidel, Hans; Gruber, Wolfgang; and Brunner, Herwig, 4,343,903, Cl. 435-197.000.

Seifert, Hans-Gordon, to International Business Machines Corporation. Electromagnetic release mechanism for print hammers or the like. 4,343,239, Cl. 101-93.340.

Seilib: *See*—
Liber, Michel, 4,343,065, Cl. 16-225.000.

Seitzer, Philip W.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.

Selden, Adrian C.: *See*—
Spalding, Ian J.; Selden, Adrian C.; and Armandillo, Errico, 4,344,174, Cl. 372-91.000.

Semenov, Vladimir: *See*—
Peise, Helmut; Heinrich, Wolfgang; Gohler, Peter; Berger, Friedrich; Lucas, Klaus; Schingnitz, Manfred; Konig, Dieter; Jegorow, Aleksander; Fedotov, Vasilij; Gavrilin, Vladimir; Gudumov, Ernest; Semenov, Vladimir; Achmatov, Igol; Majdurov, Nikolaj; and Abraamov, Evgenij, 4,343,626, Cl. 48-67.000.

Senkbeil, Herman O.: *See*—
Dunbar, Joseph; Holmsen, Theodore W.; and Senkbeil, Herman O., 4,343,647, Cl. 71-76.000.

Sep, Waltherus J.: *See*—
Prooi, Jacob J.; Sep, Waltherus J.; and Westerhof, Wilhelmina, 4,343,932, Cl. 528-303.000.

Sessions, Willie J.: *See*—
O'Connor, James M.; Lickei, Donald D.; and Sessions, Willie J., 4,343,916, Cl. 525-28.000.

Seymour, Shaun A., to Sperry Corporation. Crop elevator decelerating means. 4,343,137, Cl. 56-10.200.

Shackleton, Ronald; Woodruff, Christopher J.; and Fletcher, Ian M. Filter presses and a method of cleaning same. 4,343,710, Cl. 210-797.000.

Shaffer, Robert C., to HITCO. Polymers containing chemically bonded metal atoms. 4,343,922, Cl. 525-389.000.

Shapiro, Howard M. Cytological assay procedure. 4,343,782, Cl. 424-3.000.

Sharp Kabushiki Kaisha: *See*—
Shimazawa, Yoichi; and Kawamoto, Toshiaki, 4,343,596, Cl. 417-252.000.

Shaw, Terrence M., to Cummins Engine Company, Inc. Cylinder block for an internal combustion engine. 4,343,267, Cl. 123-41.810.

Shefsiek, Paul K.: *See*—
Lippert, Charles; Nowak, Leonard G.; and Shefsiek, Paul K., 4,343,395, Cl. 198-781.000.

Shekleton, Jack R., to Solar Turbines Incorporated. Combustors and combustion systems. 4,343,147, Cl. 60-39.060.

Shekleton, Jack R., to Solar Turbines Incorporated. Liquid fueled combustors with rotary cup atomizers. 4,343,148, Cl. 60-39.060.

Shell Oil Company: *See*—
Goodall, Brian L.; and van der Sar, Jacob C., 4,343,721, Cl. 252-429.00B.
Winquist, Bruce H. C., 4,343,692, Cl. 208-111.000.

Shelton, Andrew B. Tie back holder with pleat support. 4,343,344, Cl. 160-349.00D.

Shelton, Charles L., to Quik-to-Fix Products, Inc. Meat cutlet tenderizing machine. 4,343,067, Cl. 17-26.000.

Shelton, Lawrence S.; Boigk, Dieter G.; and Gabriel, William L., to Signode Corporation. Nail stack. 4,343,579, Cl. 411-442.000.

Shem Safe Incorporated: *See*—
Shemitz, Norman S., 4,343,117, Cl. 52-90.000.

Shemitz, Norman S., to Shem Safe Incorporated. Assemblable structures. 4,343,117, Cl. 52-90.000.

Shepherd, Clarence R. Diesel engine fuel preheating system. 4,343,283, Cl. 123-557.000.

Sheptak, Nicholas, to American Can Company. Multi-ply laminae. 4,343,851, Cl. 428-212.000.

Sher, Arden; and Mooney, John B., to Savin Corporation. Multilayer photoconductive assembly with intermediate heterojunction. 4,343,881, Cl. 430-57.000.

Sherex Chemical Company, Inc.: *See*—
Egan, Richard R.; and Cotrell, Phillip L., 4,343,726, Cl. 252-547.000.

Shew, David S. Process for forming printing characters. 4,343,615, Cl. 493-325.000.

Shibata, Shuichi: *See*—
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,343,638, Cl. 65-2.000.

Shiley, Inc.: *See*—
Fettel, Bruce E.; Morris, Paul E.; and Lichte, Leo J., 4,343,049, Cl. 3-1.500.

Shimano Industrial Company Limited: *See*—
Shimano, Keizo, 4,343,201, Cl. 74-475.000.

Shimano, Keizo, to Shimano Industrial Company Limited. Speed control device. 4,343,201, Cl. 74-475.000.

Shimazawa, Yoichi; and Kawamoto, Toshiaki, to Sharp Kabushiki Kaisha. Constant flow rate liquid supply pump. 4,343,596, Cl. 417-252.000.

Shimomura, Takao, to Mitsui Toatsu Chemicals, Inc. Flow rate measuring instrument. 4,343,192, Cl. 73-861.210.

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Price, Derrick I., 4,343,571, Cl. 405-284.000.
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Maine, Reuben E., 4,344,041, Cl. 329-50.000.
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Stader, Irvin S. Earthquake game device. 4,343,475, Cl. 273-276.000.
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Ginsburgh, Irwin; and Hall, Robert D., 4,343,361, Cl. 166-251.000.
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Stang, John H.; Brighton, Walter A.; and Ruthmansdorfer, David A., to Cummins Engine Company, Inc. Energy conserving exhaust passage for an internal combustion engine. 4,343,268, Cl. 123-90.400.
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Stephens, Peter H. Three-dimensional drawing tool. 4,343,091, Cl. 33-18.00R.
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Nordlund, Sven P., 4,343,172, Cl. 72-339.000.
Swain, Richard S.; and Moore, Douglas, to Norlin Industries, Inc. Serial interface circuit for an electronic musical instrument. 4,343,216, Cl. 84-1.010.
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., to Swanson, Arthur M.; and ChemVen, Inc. Natural cheese analog. 4,343,817, Cl. 426-36.000.
Swanson, Robert J.: *See*—
Swanson, Arthur M.; Swanson, Robert J.; Seibel, James K.; and Pavelec, Frank L., 4,343,817, Cl. 426-36.000.
Swanson, Roy T., to S&C Electric Company. Arcing rod catcher for high voltage fuse. 4,344,059, Cl. 337-174.000.
Sweeney, Lawrence J.: *See*—
Emmert, Joseph W.; and Sweeney, Lawrence J., 4,343,394, Cl. 198-616.000.
Sweetser, Philip B., to Du Pont de Nemours, E. I., and Company. Herbicide antidotes. 4,343,649, Cl. 71-93.000.
Swiss Aluminium Ltd.: *See*—
Brockmeyer, Jerry W., 4,343,704, Cl. 210-509.000.
Wagner, Alfred; and Ames, Adolf, 4,343,425, Cl. 228-117.000.
Szabo, Andrea. Display of articles. 4,343,104, Cl. 40-10.00R.
Szabo, Lajos: *See*—
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, 4,343,738, Cl. 260-239.30P.
Szalay, Andrew. Concentrated GTF chromium complex brewers yeast and process for producing same. 4,343,905, Cl. 435-256.000.
Szantay, Csaba; Szabo, Lajos; Kalaus, Gyorgy; Dancsi, Lajos; Keve, Tibor; and Drexler, Ferenc, to Richter Gedeon Vegyeszeti Gyar Rt. Halogenated 15-hydroxy-E-homoeburane derivatives. 4,343,738, Cl. 260-239.30P.
Sze, Simon M.: *See*—
Lepselter, Martin P.; and Sze, Simon M., 4,343,082, Cl. 29-576.00B.
Tadiran Israel Electronics Industries, Ltd.: *See*—
Vardi, Isaih; Kimchi, Yigal; and Ben-Dror, Jonathan, 4,343,159, Cl. 62-475.000.
Tagami, Tomoyuki: *See*—
Hoshi, Norio; and Tagami, Tomoyuki, 4,343,204, Cl. 74-594.700.
Tahara, Toshiro: *See*—
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, 4,343,892, Cl. 430-398.000.
Taiho Kogyo Co., Ltd.: *See*—
Fukuoka, Tatsuhiko; and Takenaka, Akira, 4,343,479, Cl. 277-96.200.
Taisei Kogyo Kabushiki Kaisha: *See*—
Hattori, Kiyoshi, 4,343,157, Cl. 62-160.000.
Tait, Robert J.: *See*—
Ciesemier, Allen L.; Tait, Robert J.; and Smith, Leonard A., 4,344,060, Cl. 337-260.000.
Taiyo Chuki Co., Ltd.: *See*—
Tawara, Koji, 4,343,554, Cl. 366-65.000.
Taka, Kazuyoshi: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Takada, Kazuo: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.
Takada, Moritaka; and Kanda, Hiroshi, to Nisshin Oil Mills Ltd. Process for the preparation of an aerosol type whipping cream. 4,343,825, Cl. 426-570.000.
Takahashi, Yoshiharu: *See*—
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.
Takai, Kazuki, to Clarion Co., Ltd. Lock mechanism for use in tape player. 4,344,097, Cl. 360-96.600.
Takata, Kenichi: *See*—
Kondo, Tadasige; Ono, Susumu; and Takata, Kenichi, 4,343,273, Cl. 123-335.000.
Takatori Machinery Works Ltd.: *See*—
Takatori, Osho, 4,343,254, Cl. 112-262.200.
Takatori, Osho, to Takatori Machinery Works Ltd. Method and apparatus for closing the toe end of a hose. 4,343,254, Cl. 112-262.200.
Takeda, Mutsuhiko: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Takemura, Katsuyoshi; Kondo, Masatoshi; Hasuike, Fumio; and Okada, Yoshifumi, to Matsushita Electric Industrial Co. Ltd. Method of manufacturing flexible printed circuit sheets. 4,343,083, Cl. 29-832.000.
Takenaka, Akira: *See*—
Fukuoka, Tatsuhiko; and Takenaka, Akira, 4,343,479, Cl. 277-96.200.
Takenoya, Hideaki; and Shomura, Eiichi, to Janome Sewing Machine Co. Ltd. Stitch-length correcting sewing machine and stitch-length measuring presser foot assembly used therein. 4,343,249, Cl. 112-158.00E.
Takenoya, Hideaki: *See*—
Hanyu, Susumu; Takenoya, Hideaki; and Fujimura, Toshiro, 4,343,248, Cl. 112-158.00E.
Takeuchi, Koji: *See*—
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.
Talres Development (N.A.) N.V.: *See*—
Jenner, Michael R.; and Waite, David, 4,343,934, Cl. 536-122.000.
Tamba, Shinichi; Yamamoto, Hitoshi; and Uda, Ryoji, to Kawasaki Jukogyo Kabushiki Kaisha. Crank mechanism lubricating system. 4,343,377, Cl. 184-6.500.
Tamoto, Katsumi: *See*—
Agui, Hideo; Tamoto, Katsumi; Aono, Shunji; and Okuda, Takao, 4,343,801, Cl. 424-249.000.
Tamura, Koichi: *See*—
Haraikawa, Tetsuo; and Tamura, Koichi, 4,343,381, Cl. 188-73.450.
Tamura, Yutaka: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,343,959, Cl. 585-640.000.
Tanabe, Kenzo; Suzuki, Junji; and Kanno, Masashi, to Matsushita Electric Industrial Co., Ltd. Balanced modulator. 4,344,188, Cl. 455-326.000.
Tanahashi, Toshio: *See*—
Tsuzuki, Yoshihiko; Uchida, Kiyoshi; and Tanahashi, Toshio, 4,343,229, Cl. 92-212.000.
Tanaka, Katsumasa: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Tanaka, Shinsaku; and Kido, Kunio, to Tanashin Denki Co., Ltd. Cassette tape recorder. 4,344,096, Cl. 360-96.500.
Tanashin Denki Co., Ltd.: *See*—
Tanaka, Shinsaku; and Kido, Kunio, 4,344,096, Cl. 360-96.500.
Tanca, Michael C., to Combustion Engineering, Inc. Method of operating a two-stage coal gasifier. 4,343,627, Cl. 48-202.000.
Tarng, Ming L., to RCA Corporation. Etching a semiconductor material and automatically stopping same. 4,343,676, Cl. 156-628.000.

Tartokowsky, Michael: *See*—
Aidlin, Stephen H.; and Tartokowsky, Michael, 4,343,587, Cl. 414-568.000.
Task, Harry L., to United States of America, Air Force. Vibration stabilized image projection system. 4,343,539, Cl. 353-122.000.
Tateoka, Masamichi; and Tsuji, Takao, to Canon Kabushiki Kaisha. Light beam scanning device with constant spot intensity and scan speed related modulating means. 4,343,531, Cl. 350-6.500.
Tawara, Koji, to Taiyo Chuki Co., Ltd. Kneader for particulate to granular materials. 4,343,554, Cl. 366-65.000.
Taylor, Gene W., to United States of America, Energy. Fluorinated diamond bonded in fluorocarbon resin. 4,343,628, Cl. 51-298.000.
Tazaki, Takaharu: *See*—
Nozawa, Takamitsu; and Tazaki, Takaharu, 4,343,397, Cl. 206-37.000.
TDK Electronics Co., Ltd.: *See*—
Saito, Seitoku; Izumi, Toshiaki; Sugihara, Hiroshi; Kobuke, Takayoshi; and Takada, Kazuo, 4,343,834, Cl. 427-132.000.
Tedeschi, Anthony, to Western Electric Co., Inc. Article handling methods including reorienting randomly misoriented articles. 4,343,585, Cl. 414-403.000.
Tefertiller, Nancy B.; and Harris, Robert F., to Dow Chemical Company, The. Addition polymerizable polyethylenic polymers having pendant acryloyl urethane groups. 4,343,919, Cl. 525-278.000.
Tektronix, Inc.: *See*—
Cabot, Richard C.; and Hofer, Bruce E., 4,344,029, Cl. 324-57.00R.
Temkin, Henryk: *See*—
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Tenneco Inc.: *See*—
Schaefer, David V.; and Hamkins, Clark J., 4,343,386, Cl. 192-54.000.
Tepper, James M.: *See*—
Chesnut, Ronald D.; and Tepper, James M., 4,343,411, Cl. 220-242.000.
Tersteegen, Johannes, to Deutsche Forschungs- und Versuchsanstalt fur Luft- u. Raumfahrt. Electro-hydraulic actuating device and a fast-switching magnetic valve for use therein. 4,343,331, Cl. 137-625.650.
Tetra Pak International AB: *See*—
Holmstrom, Sven N. H., 4,343,402, Cl. 206-622.000.
Texaco Development Corp.: *See*—
Hunter, Walter D., 4,343,712, Cl. 252-8.55D.
Texaco Inc.: *See*—
Gates, Walter C., Jr., 4,343,625, Cl. 48-62.00R.
Kalfoglou, George, 4,343,711, Cl. 252-8.55D.
Texas Instruments Incorporated: *See*—
Brantingham, George L.; and Wiggins, Richard H., Jr., 4,344,148, Cl. 364-724.000.
Klaas, Jeffrey M.; Reed, Paul A.; and Rimawi, Isam, 4,344,154, Cl. 365-194.000.
White, Lionel S., Jr.; and Mohan Rao, G. R., 4,344,157, Cl. 365-222.000.
Textron Inc.: *See*—
Turansky, Clement J.; and LeBlanc, Gerard J., 4,343,329, Cl. 137-625.440.
Thacker, Bobby J. Archery bow. 4,343,286, Cl. 124-24.00R.
Thatcher, Raymond K.: *See*—
Gavin, Basil F.; MacGill, Robert A.; and Thatcher, Raymond K., 4,344,019, Cl. 315-111.810.
Thayer, Richard S.; Herbert, William J.; and Klein, Gary S., to Eaton Corporation. Shrinkable sleeve adapted for cable and tubing gas flow blocking. 4,343,844, Cl. 428-36.000.
Thiel, Peter H.: *See*—
Holtzman, Barry L.; Mercier, George E.; Thiel, Peter H.; and Santilli, James N., 4,344,105, Cl. 361-328.000.
Thiery, Jean: *See*—
Chatard, Michel; Sonnet, Alain; and Thiery, Jean, 4,343,370, Cl. 175-107.000.
Thomas, Daniel W.: *See*—
Cesark, Frank F.; Manfre, Robert J.; and Thomas, Daniel W., 4,343,939, Cl. 544-165.000.
Thomas, Donald E., to Westinghouse Electric Corp. Substrate for silicon solar cells. 4,343,963, Cl. 136-258.000.
Thomas, William R. Animal caging system. 4,343,261, Cl. 119-15.000.
Thomason, Harry E.; and Thomason, Harry J. L., Jr. Solar domestic water heater. 4,343,293, Cl. 126-400.000.
Thomason, Harry J. L., Jr.: *See*—
Thomason, Harry E.; and Thomason, Harry J. L., Jr., 4,343,293, Cl. 126-400.000.
Thompson, Arthur D., III: *See*—
Smith, James N.; and Thompson, Arthur D., III, 4,343,832, Cl. 427-53.100.
Thompson, David A.; and Worthington, Thomas K., to International Business Machines Corporation. Coding schemes for acoustic delay line data collection system. 4,344,068, Cl. 340-365.00L.
Thompson, Edwin C., to Western Electric Company, Inc. Method of fine-tuning a monolithic crystal filter. 4,343,827, Cl. 427-8.000.
Thompson, Eileen. Weather stripping apparatus. 4,343,110, Cl. 49-477.000.
Thompson, Kenneth P., to Champion International Corporation. Pigmented coated paperboard. 4,343,858, Cl. 428-342.000.
Thomson-CSF: *See*—
Bricot, Claude; and Leterme, Dominique, 4,344,164, Cl. 369-44.000.
Coussot, Gerard, 4,344,051, Cl. 333-194.000.
Thorson, Clayton W., to Eaton Corporation. Fluid pressure operated pump or motor with secondary valve means for minimum and maximum volume chambers. 4,343,600, Cl. 418-61.00B.
Thorson, Clayton W., to Eaton Corporation. Fluid pressure device and shuttle valve assembly therefor. 4,343,601, Cl. 418-61.00B.
Thunderbolt Corporation: *See*—
Steiner, John W., 4,343,500, Cl. 292-175.000.
Thune-Eureka A/S: *See*—
Volle, Frode I., 4,343,211, Cl. 83-177.000.
Tiers, George V. D.: *See*—
Aasen, Steven M.; Dalzell, Rex J.; Goettert, Edward J.; Holmes, Brian N.; and Tiers, George V. D., 4,343,891, Cl. 430-337.000.
Tihanyi, Jeno, to Siemens Aktiengesellschaft. Field effect transistor. 4,344,080, Cl. 357-23.000.
Tilley, George L., to Union Oil Company of California. Method for recovering valuable metals from deactivated catalysts. 4,343,774, Cl. 423-53.000.
Timothy, Earle J.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; Westkamper, Michael J.; Timothy, Earle J.; and Johnson, Richard H., 4,344,146, Cl. 364-552.000.
Tinti, Maria O.: *See*—
De Witt, Paolo; and Tinti, Maria O., 4,343,947, Cl. 548-344.000.
Tjosvold, David C. Furnace. 4,343,288, Cl. 126-112.000.
Toa Wool Spinning & Weaving Co., Ltd.: *See*—
Kazama, Ken; Muramoto, Ikuo; Ozaki, Kenji; and Kusunoki, Yoshinobu, 4,343,619, Cl. 8-139.000.
Tobias, Stephen A.: *See*—
Basily, Basily B.; Das, Mihir K.; Price, Clifford G.; and Tobias, Stephen A., 4,343,208, Cl. 83-13.000.
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, to Nippon Telegraph & Telephone Public Corporation. Light weight battery. 4,343,871, Cl. 429-197.000.
Tobita, Toshio: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.
Tochikubo, Hiroo; and Kanai, Akira, to Hitachi, Ltd. Method of fabricating single-crystalline silicon films. 4,343,829, Cl. 427-35.000.
Toda, Haruhisa; and Matsumoto, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Automatic trip device for circuit interrupter. 4,344,055, Cl. 335-174.000.
Todd, Paul H., Jr.; and Haley, Howard E., to Kalsec, Inc. Liquid seasoning compositions IV. 4,343,823, Cl. 426-250.000.
Todokoro, Akio: *See*—
Otsuka, Katsuyuki; Todokoro, Akio; Takahashi, Yoshiharu; Hiroe, Kazuhito; and Ishikawa, Yoshinobu, 4,343,426, Cl. 228-170.000.
Tokarzewski, Richard J.: *See*—
Kiwala, Jacob; Tokarzewski, Richard J.; Schmitt, Frederick L.; and Sprecker, Mark A., 4,343,791, Cl. 424-84.000.
Tokico Ltd.: *See*—
Haraikawa, Tetsuo; and Tamura, Koichi, 4,343,381, Cl. 188-73.450.
Tokyo Electric Co., Ltd.: *See*—
Suzuki, Seiji; Sakamoto, Kohichiro; and Kitagawa, Tohru, 4,343,197, Cl. 73-862.650.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Kurosawa, Yasuhiro; and Matsushima, Tetsuo, 4,344,143, Cl. 364-492.000.
Tomimori, Kiyoshi; and Nakajima, Shunichi, 4,343,461, Cl. 271-22.000.
Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, 4,343,862, Cl. 428-421.000.
Tomimori, Kiyoshi; and Nakajima, Shunichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Paper feeding cassette. 4,343,461, Cl. 271-22.000.
Tomioka, Hirotaka; and Yamagata, Shuji, to Nissan Motor Co., Ltd. All glass rear door assembly for an automotive vehicle. 4,343,504, Cl. 296-76.000.
Tomita, Masao; Isaka, Takenobu; Fujisawa, Kiyoji; and Mino, Mineo, to Matsushita Electric Industrial Co., Ltd. Method of processing video signals for time base correction. 4,344,087, Cl. 358-127.000.
Toshiba Kikai Kabushiki Kaisha: *See*—
Satoh, Mitsuharu; and Aiso, Katsuyoshi, 4,343,077, Cl. 29-568.000.
Tosi, Bruno: *See*—
Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, 4,343,766, Cl. 422-63.000.
Toukan, Sameeh S.; and Nannelli, Piero, to Pennwalt Corporation. Purification of 2-mercaptobenzothiazole. 4,343,946, Cl. 548-177.000.
Tourasse, Marc; and Duvernay, Roger. Apparatus for machining cams at a constant cutting speed. 4,343,114, Cl. 51-165.710.
Townsend, John M.; and Valentine, Donald, Jr., to Hoffmann-La Roche Inc. Chiral phosphines. 4,343,741, Cl. 548-412.000.
Toyo Boseki Kabushiki Kaisha: *See*—
Isaka, Tsutomu; Ohashi, Kazuyoshi; and Miyazaki, Yukinobu, 4,343,852, Cl. 428-216.000.
Toyo Kogyo Co., Ltd.: *See*—
Mashimo, Toru, 4,343,367, Cl. 173-43.000.
Toyomura, Shigeru, to Canon Kabushiki Kaisha. Electronic device having unitary display and printing sections. 4,343,968, Cl. 178-23.00R.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kaji, Kiyokane, 4,343,187, Cl. 73-654.000.
Numasawa, Akio; Kizu, Ryouhei; Naka, Mitsuru; and Hiraiwa, Nobuo, 4,343,330, Cl. 137-625.480.
Ohnaka, Hidemi; and Ishikawa, Norikatsu, 4,343,277, Cl. 123-389.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,343,489, Cl. 280-804.000.

Tsuzuki, Yoshihiko; Uchida, Kiyoshi; and Tanahashi, Toshio, 4,343,229, Cl. 92-212.000.
Trans-Data Associates: *See*—
Kellett, Henry G., 4,343,969, Cl. 179-1.0SD.
Trees, Ferdinand M.: *See*—
de Vries, Jochem J.; and Trees, Ferdinand M., 4,343,086, Cl. 30-43.600.
Trefimetaux: *See*—
Moreau, Marc, 4,343,169, Cl. 72-45.000.
Triad Service & Marketing, Ltd.: *See*—
Osthus, Ramon L., 4,343,449, Cl. 248-156.000.
Trico Products Corporation: *See*—
Batt, Richard A., 4,343,063, Cl. 15-250.420.
Trisciani, Adriano: *See*—
Sisti, Giorgio; Tosi, Bruno; and Trisciani, Adriano, 4,343,766, Cl. 422-63.000.
Trombetti, Fulvio: *See*—
Sartorio, Emanuele; Calcagno, Benedetto; Trombetti, Fulvio; and Ghirga, Marcello, 4,343,957, Cl. 585-449.000.
Trygg, Lars E. Liquid dispensing device. 4,343,336, Cl. 141-218.000.
Tsopelas, John. Automobile radiator filter. 4,343,353, Cl. 165-119.000.
Tsuchida, Yutaka: *See*—
Hishinuma, Takehiro; and Tsuchida, Yutaka, 4,343,212, Cl. 83-303.000.
Tsuchiya, Shuyou: *See*—
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Tsuchiya, Takao; and Soneda, Mitsuo, to Sony Corporation. Clocking signal drive circuit for charge transfer device. 4,344,001, Cl. 307-221.00D.
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Process for producing magnetic recording medium. 4,343,831, Cl. 427-44.000.
Tsuji, Takao: *See*—
Tateoka, Masamichi; and Tsuji, Takao, 4,343,531, Cl. 350-6.500.
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, to Pioneer Electronic Corporation. Vibratory elements for audio equipment. 4,343,376, Cl. 181-167.000.
Tsumita, Norikazu: *See*—
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, 4,344,153, Cl. 365-39.000.
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Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.
Tsuzuki, Yoshihiko; Uchida, Kiyoshi; and Tanahashi, Toshio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Assembled piston for engine. 4,343,229, Cl. 92-212.000.
Tu, Hosheng: *See*—
Rogers, Edward S.; and Tu, Hosheng, 4,343,723, Cl. 252-455.00Z.
Tuchenhagen, Otto A. P. Process for monitoring tank inside cleaners driven by cleansers. 4,343,656, Cl. 134-18.000.
Tugimura, Sinichiro: *See*—
Suzuki, Tadashi; and Tugimura, Sinichiro, 4,343,089, Cl. 30-346.510.
Tullis, Philip H.: *See*—
Klekamp, William H.; and Tullis, Philip H., 4,343,101, Cl. 37-129.000.
Tuomi, Alpo: *See*—
Rantanen, Mikko; Tuomi, Alpo; and Laiho, Reino, 4,343,708, Cl. 210-744.000.
Turansky, Clement J.; and LeBlanc, Gerard J., to Textron Inc. Bistable fuel valve. 4,343,329, Cl. 137-625.440.
Turta, Alexandru; and Cucuiat, Marius, to Institutul de Cercetari si Proiectari Pentru Petrol si Gaze. Recovery of oil from an oil reservoir by miscible displacement. 4,343,362, Cl. 166-267.000.
Tuttle, Willard N.: *See*—
Dinsmore, Harold L.; Schwartz, Robert E.; and Tuttle, Willard N., 4,343,629, Cl. 55-28.000.
Tzakis, George J.: *See*—
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UARCO Incorporated: *See*—
Fitzgibbons, Gary W., 4,343,492, Cl. 282-11.50R.
Ubezio, Lorenzo, to Reppisch-Werke AG. Drafting apparatus. 4,343,094, Cl. 33-430.000.
Uchida, Kiyoshi: *See*—
Tsuzuki, Yoshihiko; Uchida, Kiyoshi; and Tanahashi, Toshio, 4,343,229, Cl. 92-212.000.
Uchidoi, Masataka: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.
Uchimura, Kunio: *See*—
Konno, Kazuhiko; Goh, Atsushi; and Uchimura, Kunio, 4,343,737, Cl. 260-239.0BF.
Uda, Ryoji: *See*—
Tamba, Shinichi; Yamamoto, Hitoshi; and Uda, Ryoji, 4,343,377, Cl. 184-6.500.
Ueda, Shigeki, to Matsushita Electric Industrial Co. Ltd. Heating apparatus safety device using voice synthesizer. 4,343,990, Cl. 219-492.000.
Uemura, Yahiro; Arimura, Hirofumi; Morise, Hiroshi; Funakoshi, Satoshi; and Suyama, Tadakazu, to Green Cross Corporation, The. Process for recovering interferon. 4,343,736, Cl. 260-112.00R.
Uenaka, Kazushige; Kashiwagi, Shinichi; Tahara, Toshiro; Shirasu, Kazuo; Usui, Yoshio; Abe, Akira; Nakagawa, Fumio; and Masuda, Tetsuya, to Fuji Photo Film Co., Ltd. Method and apparatus for silver recovery during photographic processing. 4,343,892, Cl. 430-398.000.
Uetrecht, Dale M., to Baldwin Piano & Organ Company. Delay line oscillator. 4,343,219, Cl. 84-1.240.
UHDE GmbH: *See*—
Wolstein, Friedrich; Hoffmann, Egbert; and Epper, Wolfgang, 4,343,780, Cl. 423-321.00R.
Umemura, Toshikazu: *See*—
Sugio, Akitoshi; Taka, Kazuyoshi; Amemiya, Akira; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; Umemura, Toshikazu; and Ono, Yoshihiro, 4,343,929, Cl. 528-241.000.
Umezaki, Hiroshi: *See*—
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, 4,344,153, Cl. 365-39.000.
Union Carbide Corporation: *See*—
Davis, Robert B., 4,343,634, Cl. 62-62.000.
Decker, Quintin W.; and Marcus, Erich, 4,343,616, Cl. 8-115.600.
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Lok, Brent M., 4,343,717, Cl. 252-313.00S.
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Dixon, Samuel, Jr., 4,344,047, Cl. 333-17.00L.
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Saltzman, Edwin J., 4,343,506, Cl. 296-1.00S.

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Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.
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Gryskiewicz, Gregory A., 4,343,358, Cl. 166-227.000.
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Urquhart, Roderick M., to Burroughs Corporation. Latch mechanism for use with removable media. 4,343,546, Cl. 354-281.000.

Ushimaru, Imao: *See—*
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Vehling, Ernst: *See—*
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Victor, Michael; and Bowers, James R. Flow measuring device. 4,343,195, Cl. 73-861.660.

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Caumartin, Francois; Vidal, Jean L.; and Mangin, Pierre, 4,343,926, Cl. 526-68.000.

Vig, John R.; and Ballato, Arthur D., to United States of America, Army. Acceleration resistant combination of opposite-handed piezoelectric crystals. 4,344,010, Cl. 310-361.000.

Villax, Ivan; and Page, Philip R., to Plurichemie Anstalt. Process of selective solvolysis. 4,343,739, Cl. 260-397.450.

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Stowers, Jeffrey P.; Stickle, Robert E.; and Cash, Herbert B., 4,344,033, Cl. 324-158.00F.

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Vlahos-Gottschalk Research Corp.: *See—*
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Wade, Clinton P.; and Rowland, Stanley P., to United States of America, Agriculture. Removal of lint from cottonseed. 4,343,070, Cl. 19-40.000.

Wagner, Alfred; and Ames, Adolf, to Swiss Aluminium Ltd. Process and device for the production of a composite section. 4,343,425, Cl. 228-117.000.

Wahl, Robert O.; Hay, William D.; and Prohaska, Raymond J., to UPA Technology, Inc. Probe guide and holder. 4,343,092, Cl. 33-169.00R.

Waite, David: *See*—
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Walker, Robert. Rotor tiller with reversely directed plow. 4,343,366, Cl. 172-41.000.

Wallace, Harry L.: *See*—
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Wallace, Terry C., Sr.: *See*—
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Ware, Franklyn O.; and McDonald, William S., to MPW Tech. Associates. Process for the production of corrugated paperboard adhesive. 4,343,654, Cl. 106-213.000.

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Warner Electric Brake & Clutch Company: *See*—
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Watabe, Yasuo, to Fuji Electric Co., Ltd. System for non-magnetic metal selection. 4,343,695, Cl. 209-212.000.

Watanabe, Ichiro; and Satoh, Yoshiaki, to Nitto Chemical Industry Co., Ltd. Process for producing stable aqueous solution of acrylamide or methacrylamide. 4,343,899, Cl. 435-129.000.

Watanabe, Ichiro, to Nitto Chemical Industry Co., Ltd. Process for the production of acrylamide using microorganism. 4,343,900, Cl. 435-129.000.

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Watanabe, Seizaburo; and Matsuki, Yutaka, to Asahi-Dow Limited. Expanded thermoplastic synthetic resin and composition therefor. 4,343,913, Cl. 521-94.000.

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Webber, Dean A.; and Bosse, Peter S., to Sprague Electric Company. Solid tantalum capacitor with clean riser. 4,344,107, Cl. 361-433.000.

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Western Geophysical Co. of America: *See*—
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McConnel, Ronald J., 4,343,259, Cl. 118-44.000.

Whatley, Marvin E.: *See*—
Morgan, J. Giles; Rennich, Mark J.; and Whatley, Marvin E., 4,343,478, Cl. 277-90.000.

White, Lionel S., Jr.; and Mohan Rao, G. R., to Texas Instruments Incorporated. On-chip refresh address generator for dynamic memory. 4,344,157, Cl. 365-222.000.

White, Stanley A., to Rockwell International Corporation. ROM-Based complex multiplier useful for FFT butterfly arithmetic unit. 4,344,151, Cl. 364-754.000.

Wiggins, Richard H., Jr.: *See*—
Brantingham, George L.; and Wiggins, Richard H., Jr., 4,344,148, Cl. 364-724.000.

Wilcox, Donald G.; and Zambrano, Nobile, to Show-Pak Incorporated. Hinge for carrying case. 4,343,412, Cl. 220-342.000.

Wilde, Sheldon L.; McCandless, Thomas J.; and Saunders, Robert M., to H-C Industries, Inc. Process and apparatus for molding liners in container closures. 4,343,754, Cl. 264-154.000.

Wilden, Rolf: *See*—
Hubner, Horst; Lersmacher, Bernhard; Lydtin, Hans; and Wilden, Rolf, 4,344,012, Cl. 313-60.000.

Wilkins, Cletus W., Jr.: *See*—
Reichmanis, Elsa; and Wilkins, Cletus W., Jr., 4,343,889, Cl. 430-311.000.

Wilkinson, George F., Jr.: *See*—
Bitler, Joel R.; Bodnar, Michael W.; Booth, Raymond H.; Roman, Daniel J.; Schneider, Fred J.; Seitzer, Philip W.; and Wilkinson, George F., Jr., 4,344,064, Cl. 338-334.000.

Wilkinson, Samuel, to Burroughs Wellcome Co. Biologically active amides. 4,343,795, Cl. 424-177.000.

Willenbrock, William E., Jr.: *See*—
Kinsbron, Eliezer; Levinstein, Hyman J.; and Willenbrock, William E., Jr., 4,343,677, Cl. 156-643.000.

William Prym-Werke KG: *See*—
Sauermilch, Otto, 4,343,423, Cl. 227-1.000.

Williams, James H., to Borden, Inc. Aqueous foaming agent solution. 4,343,718, Cl. 252-352.000.

Williams, James W., 3rd; and Fetterolf, John S., to Fetterolf Corporation. Line blind. 4,343,332, Cl. 138-94.300.

Williams, L. Benton. Stimulating apparatus. 4,343,303, Cl. 128-32.000.

Williams, Richard C.: *See*—
Burden, Martin J.; and Williams, Richard C., 4,343,845, Cl. 428-122.000.

Williams, Robert: *See*—
Skrypek, John P.; Williams, Robert; and Dominico, James W., 4,343,391, Cl. 198-438.000.

Williams, Stanley A.: *See*—
Schimbke, Paul A.; and Williams, Stanley A., 4,343,987, Cl. 219-287.000.

Wilmarth, Paul C., to RCA Corporation. Method for making printed circuit boards with connector terminals. 4,343,084, Cl. 29-843.000.

Wilson, Max K.: *See*—
Harrington, Patrick C.; Levin, Milton I.; Shope, Walter H.; and Wilson, Max K., 4,343,527, Cl. 339-125.00R.

Wilson, Robert G.; and Rogers, Raymond W., to Wilson, Robert G. Counter top food warmer and display case. 4,343,985, Cl. 219-214.000.

Wilson, Robert K.: *See*—
Runkle, Dean; Wilson, Robert K.; and Monroe, William E., 4,343,225, Cl. 91-52.000.

Winkler, Otto, to Balzers Aktiengesellschaft fur Hochvakuumtechnik und Dunne Schichten. High vacuum valve construction. 4,343,455, Cl. 251-58.000.

Winquist, Bruce H. C., to Shell Oil Company. Catalytic dewaxing process. 4,343,692, Cl. 208-111.000.

Winship, John A.: *See*—
Lazowski, James C.; Katz, Sharron; and Winship, John A., 4,343,047, Cl. 2-411.000.

Winson, Michael A., to Webron Products Limited. Method for finishing a tubular felted sleeve. 4,343,753, Cl. 264-119.000.

Wirth, Gallo & Co.: *See*—
Wirth, Johannes; and Gallo, Mario, 4,343,196, Cl. 73-862.620.

Wirth, Johannes; and Gallo, Mario, to Wirth, Gallo & Co. Mass and force meter. 4,343,196, Cl. 73-862.620.

Wise, Rodney M., to Procter & Gamble Company, The. Particulate composition. 4,343,713, Cl. 252-92.000.

Wissler, Josef H., to Max-Planck Gesellschaft zur Forderung der Wissenschaften. Process for obtaining intact and viable leucocytes and thrombocytes from blood. 4,343,793, Cl. 424-101.000.

Witco Chemical Corporation: *See*—
Moorman, David S., 4,343,854, Cl. 428-290.000.

Witte, Donald H., to Meyer, Carl R.; and Meyer, Carol S. Stair structure for swimming pools. 4,343,120, Cl. 52-184.000.

Wittkampf, Frederik H. M.: *See*—
Cals, Guillaume L. M.; Wittkampf, Frederik H. M.; Mensink, Kornelis A.; and Brouwer, Hendrik L., 4,343,312, Cl. 128-419.0PG.

Wlodkowski, Johann; and Jungwirth, Dieter, to Dyckerhoff & Widmann Aktiengesellschaft. System for anchoring a tendon in a structural concrete unit. 4,343,122, Cl. 52-223.00L.

Wojcik, Karl: *See*—
Franchina, Antonino, 4,343,296, Cl. 126-436.000.

Wolf, Daniel E.: *See*—
Crane, Hewitt D.; and Wolf, Daniel E., 4,344,135, Cl. 364-419.000.

Wolf, Herman B., to Duke Power Company. Steam-electrical generating system using geothermal heat source. 4,343,999, Cl. 290-2.000.

Wolstein, Friedrich; Hoffmann, Egbert; and Epper, Wolfgang, to UHDE GmbH. Process for the separation of solids from phosphoric acid. 4,343,780, Cl. 423-321.00R.

Wolters, Gerrit; and Kuypers, Leonardus P. C., to Akzona Incorporated. Method and test pack for the demonstration and determination of an antigen or antibody. 4,343,896, Cl. 435-7.000.

Wood, Robert W.; Hoefler, Andrew C.; and Brody, Deborah S., to General Foods Corporation. Quick-dissolving powdered drink and method therefore. 4,343,819, Cl. 426-96.000.

Woodruff, Christopher J.: *See*—
Shackleton, Ronald; Woodruff, Christopher J.; and Fletcher, Ian M., 4,343,710, Cl. 210-797.000.

Woolsey, William D.: *See*—
DuBose, Ronald A.; and Woolsey, William D., 4,343,309, Cl. 128-303.140.

DuBose, Ronald A.; and Woolsey, William D., 4,343,310, Cl. 128-303.140.

Wooten, David R.: *See*—
Eaton, Sargent S., Jr.; and Wooten, David R., 4,344,156, Cl. 365-203.000.

Wootton, Roy E., to United States of America, Energy. Adhesive coated electrical apparatus having sublimable protective covering and an assembly method. 4,343,964, Cl. 174-10.000.

Worthington, Thomas K.: *See*—
Thompson, David A.; and Worthington, Thomas K., 4,344,068, Cl. 340-365.00L.

Wright, Harlan C.: *See*—
Basford, James A.; Mathis, John E.; and Wright, Harlan C., 4,343,176, Cl. 73-1.00G.

Wright Line Inc.: *See*—
Moriarty, Frederick J.; and Paquette, Edmund T., 4,343,244, Cl. 108-1.000.

Wuerzer, Bruno: *See*—
Hamprecht, Gerhard; Acker, Rolf-Dieter; and Wuerzer, Bruno, 4,343,648, Cl. 71-91.000.

Xerox Corporation: *See*—
Bares, Jan; and Maher, James C., 4,343,548, Cl. 355-3.0DD.
Houston, Robert D., 4,344,078, Cl. 346-75.000.

Yabushita, Akira: *See*—
Mitani, Masao; Tsunoda, Toyoji; Kawahito, Tsuneyoshi; Kamei, Tsuneaki; and Yabushita, Akira, 4,343,986, Cl. 219-216.000.

Yajima, Mikiharu; Masumiya, Masuki; and Obe, Sadao, to Nitto Boseki Co., Ltd.; and Nittobo Itamikako Co., Ltd. Apparatus for applying liquid state material onto a surface of a cloth or the like. 4,343,260, Cl. 118-204.000.

Yamada, Hirozi: *See*—
Nishida, Hideki; Yamada, Hirozi; Umezaki, Hiroshi; Sugita, Yutaka; and Tsumita, Norikazu, 4,344,153, Cl. 365-39.000.

Yamada, Hisafumi: *See*—
Utsunomiya, Kimitake; Yamada, Hisafumi; and Kuriki, Choei, 4,344,089, Cl. 358-167.000.

Yamada, Yasuyuki: *See*—
Tsuji, Nobuo; Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,343,831, Cl. 427-44.000.

Yamagata, Shuji: *See*—
Tomioka, Hirotaka; and Yamagata, Shuji, 4,343,504, Cl. 296-76.000.

Yamaji, Akihiko: *See*—
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, 4,343,871, Cl. 429-197.000.

Yamaki, Junichi: *See*—
Tobishima, Shinichi; Yamaki, Junichi; and Yamaji, Akihiko, 4,343,871, Cl. 429-197.000.

Yamamoto, Hitoshi: *See*—
Tamba, Shinichi; Yamamoto, Hitoshi; and Uda, Ryoji, 4,343,377, Cl. 184-6.500.

Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.

Yamashita, Hiromi: *See*—
Sawae, Tetsunori; Yamashita, Hiromi; Endo, Takafumi; and Tobita, Toshio, 4,343,833, Cl. 427-96.000.

Yanmar Diesel Engine Co., Ltd.: *See*—
Kawabe, Toshihiko, 4,343,270, Cl. 123-196.00V.

Yasu, Mitsuho: *See*—
Mitachi, Seiko; Shibata, Shuichi; Kanamori, Terutoshi; Manabe, Toyotaka; and Yasu, Mitsuho, 4,343,638, Cl. 65-2.000.

Yasuda, Hajime: *See*—
Asada, Kazuyoshi; Yasuda, Hajime; and Ohnuma, Kunihiko, 4,344,129, Cl. 364-200.000.

Yasuda, Nobuaki; Fujimori, Yoshinori; and Morita, Masaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Optical recording element and a method of manufacturing the same. 4,343,862, Cl. 428-421.000.

Yates, Michael S., to Smiths Industries Limited. Gas-turbine engine control. 4,344,141, Cl. 364-442.000.

Yazu, Shuji; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Sintered compact for use in a tool. 4,343,651, Cl. 75-238.000.

Yeates, Robert D. Downhole surge tools. 4,343,357, Cl. 166-154.000.

Yokobori, Nobuyoshi; Igarashi, Yoshiaki; and Maeda, Tetsuo, to Matsushita Electric Industrial Co., Ltd. Drive system for a brushless DC motor. 4,344,023, Cl. 318-254.000.

Yokozeki, Shinichi: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.

Yoneya, Satoru: *See*—
Kawata, Hiroitsu; Aruga, Masayoshi; Ohmura, Tadayoshi; Sonobe, Takashi; Yoneya, Satoru; and Sone, Chiharu, 4,343,789, Cl. 424-78.000.

Yoneyama, Masakazu: *See*—
Minamizono, Junji; Kishimoto, Shinzo; and Yoneyama, Masakazu, 4,343,894, Cl. 430-528.000.

York, Lyle E., to Caterpillar Tractor Co. Floor support for mobile scraper. 4,343,100, Cl. 37-126.0AE.

Yoshimoto, Jun: *See*—
Oshima, Mituyoshi; and Yoshimoto, Jun, 4,343,955, Cl. 568-834.000.

Yoshino Kogyosho Co., Ltd.: *See*—
Nozawa, Takamitsu; and Tazaki, Takaharu, 4,343,397, Cl. 206-37.000.

Yoshino, Toshikazu: *See*—
Tsukagoshi, Tsunehiro; Yokozeki, Shinichi; Hagiwara, Sumio; Uchidoi, Masataka; Yoshino, Toshikazu; and Arai, Yasuyuki, 4,343,376, Cl. 181-167.000.

Yoshioka, Takayuki, to Hitachi, Ltd. Static Scherbius system. 4,344,026, Cl. 318-806.000.

Young, Jerry L.: *See*—
Major, Jeffrey T.; Gibson, Nelson S., III; and Young, Jerry L., 4,344,008, Cl. 310-242.000.

Youtsey, Karl J.: *See*—
Campbell, Bonnie J.; Counts, Thomas G.; Cunningham, James L.; and Youtsey, Karl J., 4,343,350, Cl. 165-11.00R.

Yu, Philip S.: *See*—
Lin, Shu; and Yu, Philip S., 4,344,171, Cl. 371-35.000.

Yugen Kaisha Tokyo Kinzoku Seisakusho: *See*—
Fujiwara, Masashichi, 4,343,558, Cl. 401-67.000.

Yukutomi, Masuo: *See*—
Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, 4,343,732, Cl. 524-114.000.

Zama, Takashi; Takeuchi, Koji; Yukutomi, Masuo; and Ito, Fumiyuki, to Ajinomoto Company Incorporated. Stabilized halogen-containing resin compositions. 4,343,732, Cl. 524-114.000.

Zambrano, Nobile: *See*—
Wilcox, Donald G.; and Zambrano, Nobile, 4,343,412, Cl. 220-342.000.

Zanders Feinpapiere AG: *See*—
Engl, Rupert, 4,343,440, Cl. 242-67.10R.

Zaunberger, Franz X.: *See*—
Brosius, Klaus; Lindenthal, Hans; and Zaunberger, Franz X., 4,343,383, Cl. 188-296.000.

Zebell, Diane, to Angelica Corporation. Plural-size article of wearing apparel. 4,343,046, Cl. 2-105.000.

Zeller, Norbert: *See*—
Bischofberger, Walter; and Zeller, Norbert, 4,343,972, Cl. 200-81.00R.

Zellweger, Ltd.: *See*—
Baumgartner, August, 4,343,143, Cl. 57-22.000.

Zenith Radio Corporation: *See*—
Engel, Christopher M.; Srivastava, Gopal K.; and Tzakis, George J., 4,344,084, Cl. 358-21.00V.
Srivastava, Gopal K., 4,344,083, Cl. 358-21.00V.

Ziegenhorn, Joachim: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

Ziegler AG: *See*—
Ziegler, Mario; and Ziegler, Ulrich, 4,343,099, Cl. 37-103.000.

Ziegler, Mario; and Ziegler, Ulrich, to Ziegler AG. Apparatus for the parallel guidance of the bucket of a hydraulic excavator. 4,343,099, Cl. 37-103.000.

Ziegler, Ulrich: *See*—
Ziegler, Mario; and Ziegler, Ulrich, 4,343,099, Cl. 37-103.000.

Zimmerman, Valentine J. Wood burning stove. 4,343,289, Cl. 126-77.000.

Zitzloff, Wayne D., to Galtek Corporation. Plastic control valve. 4,343,456, Cl. 251-255.000.

Zublin, Edward A.: *See*—
Lyons, William C.; Scurlock, Scot L.; and Zublin, Edward A., 4,343,369, Cl. 175-75.000.

Zumsteg, Alphonse E., to Societe Suisse pour l'Industrie Horlogere Management Services S.A. Signal generator including high and low frequency oscillators. 4,344,046, Cl. 331-158.000.

Zwez, Werner: *See*—
Neumann, Ulrich; Knitsch, Karl-Wolfgang; Ziegenhorn, Joachim; Roder, Albert; Zwez, Werner; and Kramer, Werner, 4,343,897, Cl. 435-19.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF AUGUST, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Barber, Franklin D., to Standard Car Truck Company. Dampened railway car truck. Re. 31,008, Cl. 105-197.0DB.

Best, John S., to Dow Chemical Company, The. Roof construction and method thereof. Re. 31,007, Cl. 52-408.000.

Chem Systems Inc.: *See*—
Gelbein, Abraham P., Re. 31,010, Cl. 560-233.000.

Dow Chemical Company, The: *See*—
Best, John S., Re. 31,007, Cl. 52-408.000.

Gelbein, Abraham P., to Chem Systems Inc. Preparation of carboxylic acid esters with BF_3 complex catalyst. Re. 31,010, Cl. 560-233.000.

Standard Car Truck Company: *See*—
Barber, Franklin D., Re. 31,008, Cl. 105-197.0DB.

LIST OF DESIGN PATENTEES

Advertising Displays Company: *See*—
Zaro, Marvin, 265,703, Cl. D6-199.000.

AJP International: *See*—
Pappas, Anthony J., 265,736, Cl. D15-5.000.

Almond, John: *See*—
Stewart, James B.; and Almond, John, 265,767, Cl. D28-13.000.

Araujo, Armando A., Jr.: *See*—
Osrow, Harold; Araujo, Armando A., Jr.; and Perry, Gordon R., 265,715, Cl. D7-153.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Koyama, Masahiro; Miki, Kosuke; and Suzuki, Masahiko, 265,739, Cl. D16-2.000.

Atrium Structures, Inc.: *See*—
Jenn, Louis J.; and Cerola, Joseph J., 265,761, Cl. D25-17.000.

Bales, Lewis C. Ring or the like. 265,728, 8-10-82, Cl. D11-27.000.

Ballard, James H. Combined bathtub and shower enclosure. 265,756, 8-10-82, Cl. D23-49.000.

Barr, Josef J. Diamond necklace. 265,727, 8-10-82, Cl. D11-6.000.

Beale, Mark. Micro surgical instrument. 265,758, 8-10-82, Cl. D24-26.000.

Bio-Temp Products, Inc.: *See*—
Khemka, Kailash C., 265,724, Cl. D10-57.000.

Blake, Marc B.: *See*—
Sogoian, Tig; and Blake, Marc B., 265,694, Cl. D2-400.000.

Blue Box Toy Factory Limited: *See*—
Udagawa, Yoshio, 265,751, Cl. D21-143.000.

Bocuse, Paul. Wine bucket in form of a chef's hat. 265,709, 8-10-82, Cl. D7-70.000.

Bowing Enterprises: *See*—
Crumley, James H., 265,774, Cl. D92-1.00R.

Breger, Carl-Arne; and Landgren, Per-Olof, to Fiskeby Aktiebolag. Toilet paper dispenser. 265,700, 8-10-82, Cl. D6-95.000.

Cerola, Joseph J.: *See*—
Jenn, Louis J.; and Cerola, Joseph J., 265,761, Cl. D25-17.000.

Chef Francisco, Inc.: *See*—
Dunden, Walter J., 265,711, Cl. D7-76.000.

Chimney Sweeps of America, Ltd.: *See*—
Miller Stoll, Diane F.; and Kaczmarek, Jo Anne, 265,752, Cl. D21-171.000.

Ciavarella, Josephine L. Combined pattern reader and place marker. 265,695, 8-10-82, Cl. D3-18.000.

Clairol Incorporated: *See*—
Stewart, James B.; and Almond, John, 265,767, Cl. D28-13.000.

Colquhoun, Ross M. Modular wall unit. 265,701, 8-10-82, Cl. D6-164.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 265,749, Cl. D21-65.000.

Cook Coffee Company: *See*—
Roth, Peter H., 265,698, Cl. D4-25.000.

Crumley, James H., to Bowing Enterprises. Camouflage fabric or similar article. 265,774, 8-10-82, Cl. D92-1.00R.

Dart Industries Inc.: *See*—
Lahay, Charles A., 265,760, Cl. D24-59.000.

Deflecto Corporation: *See*—
Meyer, Stephen T.; and Meyer, C. Rodger, 265,743, Cl. D19-90.000.

Dowdy, Lloyd F. Outdoorsman's knife. 265,719, 8-10-82, Cl. D8-99.000.

Dunden, Walter J., to Chef Francisco, Inc. Container for freezing and storing food products. 265,711, 8-10-82, Cl. D7-76.000.

Duskin Franchise Kabushiki Kaisha: *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 265,704, Cl. D6-209.000.
Yamazaki, Ken; Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 265,705, Cl. D6-219.000.

Emgard, Lennart; and Lofqvist, Christer, to Frigoscandia Contracting AB. Carrying arm. 265,721, 8-10-82, Cl. D8-363.000.

Famolare, Joseph P., Jr. Shoe bottom. 265,690, 8-10-82, Cl. D2-322.000.

Famolare, Joseph P., Jr. Shoe bottom. 265,691, 8-10-82, Cl. D2-322.000.

Famolare, Joseph P., Jr. Shoe bottom. 265,692, 8-10-82, Cl. D2-322.000.

Farrell, Joseph R. Novelty ruler. 265,726, 8-10-82, Cl. D10-71.000.

Fiskeby Aktiebolag: *See*—
Breger, Carl-Arne; and Landgren, Per-Olof, 265,700, Cl. D6-95.000.

Franks, Douglas G. K. Portable floodlight. 265,763, 8-10-82, Cl. D26-64.000.

Franks, Douglas G. K. Portable floodlight. 265,764, 8-10-82, Cl. D26-64.000.

Freeborn, Stuart: *See*—
Lucas, George W., Jr.; McQuarrie, Ralph; Johnston, Joseph E.; and Freeborn, Stuart, 265,754, Cl. D21-180.000.

Frigoscandia Contracting AB: *See*—
Emgard, Lennart; and Lofqvist, Christer, 265,721, Cl. D8-363.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Dialing pad. 265,730, 8-10-82, Cl. D14-66.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Telephone set. 265,733, 8-10-82, Cl. D14-53.000.

Fukushima, Hisao; and Hirooka, Junji, to Oki Electric Industry Co., Ltd. Dialing pad for a car telephone set. 265,735, 8-10-82, Cl. D14-66.000.

Funahashi, Tatsuro, to Shachihata Industrial Co., Ltd. Felt pen. 265,741, 8-10-82, Cl. D19-49.000.

Gardisette International AG: *See*—
Stocker, Hans, 265,769, Cl. D47-6.00E.
Stocker, Hans, 265,770, Cl. D47-6.00E.
Stocker, Hans, 265,771, Cl. D47-6.00E.
Stocker, Hans, 265,772, Cl. D47-6.00E.

Gibbon, Johnnie R., Jr. Combination flashlight and spanner wrench. 265,762, 8-10-82, Cl. D26-38.000.

Haines, Barbara A.: *See*—
Haines, Kathryn A.; and Haines, Barbara A., 265,755, Cl. D21-188.000.

Haines, Kathryn A.; and Haines, Barbara A. Animal head. 265,755, 8-10-82, Cl. D21-188.000.

Harrison, James D. Shield for the bolt of a door lock. 265,720, 8-10-82, Cl. D8-346.000.

Hawkins, Kenneth R. Luminaire or similar article. 265,765, 8-10-82, Cl. D26-85.000.

Heithaus, Thomas L. Display frame. 265,706, 8-10-82, Cl. D6-234.000.

Hirooka, Junji: *See*—
Fukushima, Hisao; and Hirooka, Junji, 265,730, Cl. D14-66.000.
Fukushima, Hisao; and Hirooka, Junji, 265,733, Cl. D14-53.000.
Fukushima, Hisao; and Hirooka, Junji, 265,735, Cl. D14-66.000.

Howley, Eugene W. Document tray. 265,768, 8-10-82, Cl. D34-40.000.

Iijima, Takekazu, to Pioneer Kabushiki Kaisha. Loudspeaker. 265,732, 8-10-82, Cl. D14-30.000.

Ingram, Jerry L. Pitch and angle square. 265,725, 8-10-82, Cl. D10-65.000.

Inter-Ikea A/S: *See*—
Lundgren, Gillis L. A., 265,699, Cl. D6-37.000.

Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Mizugami, Masako, 265,749, Cl. D21-65.000.

Janome Sewing Machine Co. Ltd.: *See*—
Kuroki, Nobufusa, 265,737, Cl. D15-70.000.

Jenn, Louis J.; and Cerola, Joseph J., to Atrium Structures, Inc. Restaurant building. 265,761, 8-10-82, Cl. D25-17.000.

Johnston, Joseph E.: *See*—
Lucas, George W., Jr.; McQuarrie, Ralph; Johnston, Joseph E.; and Freeborn, Stuart, 265,754, Cl. D21-180.000.

Jonas Tobacco Corp.: *See*—
Rosenthal, Steven, 265,723, Cl. D9-346.000.
Kaczmarek, Jo Anne: *See*—
Miller Stoll, Diane F.; and Kaczmarek, Jo Anne, 265,752, Cl. D21-171.000.
Khemka, Kailash C., to Bio-Temp Products, Inc. Thermochromic finger thermometer. 265,724, 8-10-82, Cl. D10-57.000.
Kinoyama, Takehisa: *See*—
Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 265,704, Cl. D6-209.000.
Yamazaki, Ken; Yamamoto, Yosuke; Kinoyama, Takehisa; and Sasagawa, Kinichi, 265,705, Cl. D6-219.000.
Kirk, Evelyn: *See*—
Kleinpeter, Ruth; and Kirk, Evelyn, 265,753, Cl. D21-177.000.
Kleinpeter, Ruth; and Kirk, Evelyn, to Punters Club, Inc. Doll. 265,753, 8-10-82, Cl. D21-177.000.
Koszegi, Andre, to Koszegi Leather & Vinyl Products, Inc. Case for a video recorder. 265,696, 8-10-82, Cl. D3-33.000.
Koszegi Leather & Vinyl Products, Inc.: *See*—
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ISSUED AUGUST 10, 1982

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110 4,343,980
118 4,343,982
145.21 4,343,983
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214 4,343,985
216 4,343,986
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302 4,343,988
378 4,343,989
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153 4,343,417
386 4,343,418

CLASS 224

326 4,343,419

CLASS 226

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197 4,343,422

CLASS 227

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CLASS 228

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CLASS 249

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251 4,343,803
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	4,343,142	4,344,117	4,343,962	4,343,723	4,343,697	4,343,052
	4,343,147	4,344,130	4,343,983	4,343,724	20 : 4,343,443	4,343,073
	4,343,148	4,344,135	4,344,132	4,343,797	4,343,470	4,343,118
	4,343,158	4,344,137	4,344,178	4,343,820	4,343,483	4,343,125
	4,343,174	4,344,151	13 : 4,343,290	4,343,821	4,343,498	4,343,195
	4,343,181	4,344,184	4,343,309	4,343,822	4,343,561	4,343,202
	4,343,185	08 : 4,343,087	4,343,310	4,343,828	21 : 4,343,319	4,343,228
	4,343,223	4,343,112	4,343,344	4,343,849	4,343,653	4,343,269
	4,343,272	4,343,317	4,343,503	4,343,868	4,343,718	4,343,296
	4,343,314	4,343,363	4,343,511	4,343,901	4,343,942	4,343,348
	4,343,325	4,343,552	4,343,607	4,343,958	4,344,128	4,343,349
	4,343,327	4,343,640	4,343,694	4,343,973	22 : 4,343,070	4,343,375
	4,343,371	4,344,091	4,343,765	4,344,000	4,343,762	4,343,389
	4,343,390	4,344,156	4,344,076	4,344,059	4,343,781	4,343,395
	4,343,417	4,344,159	15 : 4,344,110	4,344,060	23 : 4,343,398	4,343,409
	4,343,463	09 : 4,343,117	4,344,171	4,344,083	4,344,107	4,343,419
	4,343,464	4,343,129	17 : Re.31,008	4,344,084	24 : 4,343,177	4,343,444
	4,343,506	4,343,200	4,343,060	4,344,124	4,343,257	4,343,445
	4,343,532	4,343,246	4,343,068	4,344,139	4,343,279	4,343,451
	4,343,535	4,343,295	4,343,074	18 : 4,343,084	4,343,287	4,343,472
	4,343,542	4,343,306	4,343,095	4,343,093	4,343,293	4,343,473
	4,343,543	4,343,412	4,343,100	4,343,225	4,343,307	4,343,488
	4,343,550	4,343,525	4,343,101	4,343,233	4,343,424	4,343,508
	4,343,572	4,343,540	4,343,119	4,343,267	4,343,522	4,343,523
	4,343,573	4,343,590	4,343,132	4,343,268	4,343,527	4,343,533
	4,343,603	4,343,627	4,343,151	4,343,276	4,343,663	4,343,577
	4,343,615	4,343,741	4,343,152	4,343,420	4,343,775	4,343,647
	4,343,662	4,343,803	4,343,155	4,343,485	4,344,013	4,343,701
	4,343,665	4,343,813	4,343,198	4,343,595	4,344,123	4,343,751
	4,343,700	4,343,818	4,343,216	4,343,641	25 : 4,343,053	4,343,767
		4,343,910	4,343,217	4,343,650	4,343,182	4,343,785

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265,757
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